



Project Study Report (Drainage System Restoration)

to Request Programming in the 2010 SHOPP

01-HUM-254 PM 6.87/42.13
Program Code: 20.10.201.151
01-40950K
August 2009



In Humboldt County near Miranda from 2.3 miles south of
Miranda post office to 0.9 mile south of Bear Creek Bridge # 4-12

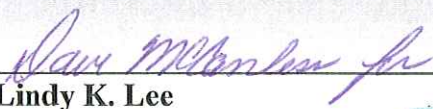


Route 254 culvert inlet at PM 15.70



Route 254 culvert inlet at PM 19.59

I have reviewed the right of way information contained in this Project Study Report and the R/W Data Sheet attached hereto, and find the data to be complete, current and accurate:


Lindy K. Lee

North Region Division Chief – Right of Way

APPROVAL RECOMMENDED:


Richard Mullen
Project Manager


Royal McCarthy
Program Advisor

APPROVED:


CHARLES C. FIELDER
District Director

August 3, 2009
Date

This Project Study Report (PSR) has been prepared under the direction of the following registered civil engineer in the District 1 Advance Planning Office. The registered civil engineer attests to the technical information contained herein and has judged the qualifications of any technical specialists providing engineering data upon which recommendations, conclusions, and decisions are based.



Ilene D Poindexter

Ilene Poindexter
Registered Civil Engineer

7/22/09

DATE

Project Study Report

1. INTRODUCTION

This project proposes a Drainage System Restoration at eight locations along Route 254 in Humboldt County between PM 6.87 and PM 42.13. See location map Attachment A. This project will alleviate current drainage problems such as soil erosion and roadway flooding due to culvert clogging from redwood needles, debris and leaves. See layout drawings Attachment C.

Route 254, also known as Avenue of the Giants, parallels Route 101 from near Phillipsville to just north of Pepperwood. The route is a continuous stretch extending approximately 32 miles through the Humboldt Redwoods State Park.

The Construction work will include removing and replacing Corrugated Metal Pipe Culverts (CMPC), deteriorated inlets and outlets and placing new Alternative Pipe Culverts (APC) with new drainage structures, Rock Energy Dissipaters (RED), Alternative Downdrain Pipes (ADP), filling eroded areas with rock, reconstructing roadway embankments, and constructing AC dikes. For a detailed list of improvements, see the Culvert Inventory Recommendations table (Attachment D). The project total cost is \$1,331,000 (year 2013/14).

Project Limits (Dist., Co., Rtc., PM)	01-HUM-254 PM 6.87/42.13
Number of Alternatives:	2
Alternative Recommended for Programming:	Alternative 1
Programmed or Proposed Capital Construction Costs:	\$1,066,000 (2013/14 FY)
Programmed or Proposal Capital Right of Way Costs:	\$265,000 (2013/14 FY)
Funding Sources:	SHOPP
Type of Facility (conventional, expressway, freeway):	Conventional 2-Lane
Number of Structures:	N/A
Anticipated Environmental Determination or Document:	IS-ND (Initial Study with a Negative Declaration).
Legal Description	In Humboldt County near Miranda from 2.3 miles south of Miranda post office to 0.9 mile south of Bear Creek Bridge # 4-12
Project Category	201.151

2. BACKGROUND

A. Project History

This project was originally initiated in 1999 due to soil erosion, culvert failure, embankment failure and increased maintenance activity in the area, and included eleven culverts. Since that time, three culverts that were originally in the project have been moved to storm damage projects, leaving this project with eight culverts.

An Environmental Categorical Exclusion report was obtained in 2001 but stricter regulations may apply today. No fish passage work will be performed on any of these culverts because they are not part of a live stream.

B. Existing Facility

Route 254 is functionally classified as a Rural Major Collector. The route is used both as a connector for unincorporated communities and as a recreational route.

Route 254 experiences seasonally heavy non-motorized traffic in and near the communities of Phillipsville, Miranda, Myers Flat, Weott, and Redcrest. The route provides access to several campgrounds that are known for their vegetation, natural scenery, swimming and fishing locations along the Eel River.

The terrain along the route is characterized as rolling with moderate grades. Route 254 is broken into two segments that are illustrated in the following table:

Segment #	HUM 254	DESCRIPTION
	PM	
1	0.0/12.3	From Route 101 to Myers Flat
2	12.3/46.5	From Myers Flat to 101 at Jordan Road

C. Geometric Information

Route 254 is an undivided two-lane conventional highway in a rural area. Within the project limits, the roadway has one 12-foot lane in each direction with shoulder widths between 0 and 2 feet wide. See Cross section details (Attachment B).

There are no sidewalks adjacent to the roadbed throughout the project.

This project was discussed with John Steele, HQ Design Coordinator and Heidi Sykes, HQ Design Reviewer; their comments are included in section 11.

3. PURPOSE AND NEED

Need: This project is needed because the culverts are deteriorating, resulting in insufficient drainage capacity. Also, the embankment is failing at specific culvert locations.

Purpose: The purpose of this project is to improve drainage systems and to reduce erosion to protect the roadway from failure.

4. DEFICIENCIES

The existing corrugated metal pipe (CMP) culverts are undersized and rusted in numerous places, allowing water seepage through roadway base material causing erosion at various locations. Proposed drainage improvements include placement of rock slope embankments, energy dissipaters, down drains, raising existing drainage inlets (DI), installing new DIs, replacing CMP culverts with alternative pipe culverts (APC), constructing drainage swales, and reconstructing roadway embankments that have eroded.

Details of existing culvert conditions:

- (1)PM 6.87 – Existing 18” culvert is undersized and the invert is perforated.
- (2)PM 15.7 - Existing 24” culvert is damaged, rusted and has debris issues. Erosion has occurred at outlet
- (3)PM 17.92 – Existing 18” culvert is undersized, the inlet needs to be replaced, the culvert outlet embankment failed.
- (4)PM 19.59 – Existing 18” culvert is undersized, new GO or GDO inlet with special grate.
- (5)PM 21.56 – Existing 24” culvert is perforated and the culvert outlet embankment failed.
- (6)PM 40.32 – Existing 24” culvert is damaged and the culvert outlet is eroded.
- (7)PM 42.10 – Existing 18” culvert is undersized, the culvert outlet has eroded and the embankment failed.
- (8)PM 42.13 – Existing 24” culvert is undersized, the culvert inlet, outlet are eroded and the outlet embankment failed.

Traffic Data:

The current and forecasted traffic data is listed below. This data was provided in a memorandum dated September 2, 2008 from the Office of Travel Forecasting and Modeling. The Traffic Index (TI) design periods are 10 and 20-year projections.

Hum 254		<u>Annual ADT</u> PM 4.84/12.33	<u>Annual ADT</u> PM 12.33/24.21	<u>Annual ADT</u> PM 24.21/46.53
Annual ADT				
Base Year	2007	1,550	540	290
	2014	1,600	560	300
	2024	1,680	590	310
	2034	1,760	610	330
Peak Hour				
Base Year	2007	430	150	80
	2014	440	160	80
	2024	470	160	90
	2034	490	170	90
20-Year Directional percentage:		57	57	57
20-Year DH Truck percentage:		3.0	4.0	4.0
10-Year Traffic Index:		6.5	6.0	5.5
20-Year Traffic Index:		7.0	6.5	6.0

Additionally, a TASAS Table B collision analysis was performed for this section of Route 254. The 3-year time period used was October 1, 2004 through September 30, 2007. The tables below summarize the total number of collisions that have occurred within the limits of this proposed project as well as a summary of the collision details.

Table 1. Collision Rates (expressed in Collisions per Million Vehicles)

Collision	Actual			Statewide Average		
	Fatal	F+I	Total	Fatal	F+I	Total
Collision rates	0.075	1.13	2.55	0.041	0.91	1.88

Collision Details

Type	Total Collisions	Fatal	Injuries	PDO	Wet	Dark	PCF 1	PCF 2	PCF 3
No. of Collisions	34	1	14	19	11	16	Improper turn	Speeding/ Influence of Alcohol	Other Than Driver

PDO = Property Damage Only

5. CORRIDOR AND SYSTEM COORDINATION

Route 254 originates near the Sylvandale Interchange on Route 101 and follows Route 101 to Stafford, completely within Humboldt County. The communities along this corridor have a population of less than 500 people. Humboldt Redwoods State Park is located virtually throughout the route. Some of the well known campgrounds include Hidden Springs, Burlington and Albee Creek, all of which allow overnight camping. Williams Grove, Bull Creek, and Dyerville allow day use only. Little additional development is anticipated along this route.

6. ALTERNATIVES

There are two alternatives including the “No Build” Alternative.

Alternative 1– Culvert replacement **Programming Alternative**

This alternative replaces the existing culverts and inlets and upgrades the embankment where needed. In order to restore and preserve the integrity of the roadway section at eight locations, culvert replacement methods will consist of:

- a. Removing and replacing corrugated metal pipe (CMP) culverts with alternative pipe culverts (APC)
- b. Placing new concrete drainage inlets
- c. Placing rock energy dissipators (RED) at the culvert outlets where necessary
- d. Filling of eroded areas and reconstructing roadway embankments where necessary

Alternative 2 – No build

This alternative does not meet the project “Need and Purpose.”

7. COMMUNITY INVOLVEMENT

There has been community interaction and Parks will be involved in this project along Route 254. It is anticipated that there will be no opposition to the planned improvements. The communities located along Route 254 include Phillipsville, Miranda, Myers Flat, Weott, and Redcrest.

8. RIGHT OF WAY

A Right of Way Data Sheet was prepared for this project. All the utility companies were contacted regarding the location of this project. The utility companies will have to underground utilities as necessary. Acquisition of three temporary construction easement plus one permanent easement from States Parks will be required as well as a wetland/riparian mitigation parcel estimated at \$243,622 (year 2013/14). See Right of Way Data Sheet Attachment G.

9. ENVIRONMENTAL DETERMINATION AND ENVIRONMENTAL ISSUES

There are information and considerations that were involved in the preparation of the Environmental Studies for this project. Environmental considerations along Route 254 include:

- Rare and sensitive plant and animal species located adjacent to Route 254 at numerous locations.
- The Eel River, a Wild and Scenic River, provides important in stream and riparian habitat. There are sensitive species associated with the river and its tributaries including a variety of federally listed plants and animals.
- Route 254 has archaeological and culturally significant sites where the local Native American Tribe (Wiyot) gathers food and materials necessary for every day life.

Preliminary Environmental Analysis Document

A Preliminary Environmental Analysis Report (PEAR) was prepared for this project and lists tree removal, impacts to threatened listed species, wetlands, farmsteads, aesthetics as potential impacts. If there are direct, indirect or cumulative impacts to listed species, avoidance measures may be required; Section 7 consultations will be necessary and permits will most likely be required.

Anticipated permits and consultation include:

- U.S. Army Corps of Engineers 404 Permit
- NOAA Fisheries consultation
- U.S. Fish and Wildlife Service consultation
- California Department of Fish and Game 1602 Permit
- North Coast Region Water Quality Control Board 401 Certification
- Native American consultation, and
- SHPO consultation

Coordination with State Parks will be needed to expedite the project progress. The general time schedule is 24 months to complete an IS/ND. See the complete PEAR for more details (Attachment H).

Storm Water Consultation

A Storm Water Data Report (SWDR) Short Form was prepared. For more details of the project description and the requirements that need to be considered, see the SWDR (Attachment I).

Landscape Architecture Assessment Sheet

A Landscape Architecture Assessment Sheet was incorporated in this study as part of the Environmental consideration. It was determined that the project will involve consideration of highway aesthetics and will require further evaluations pertaining to specific roadside enhancements, for details see Attachment J.

Hazardous Waste

An Initial Site Assessment (ISA) was prepared for this project on November 29, 2008 and found no significant hazardous waste issues associated with this project and listed the removal of yellow thermoplastic stripe as the only minor issue. The ISA is included as Attachment K.

10. PRELIMINARY HYDRAULICS AND MATERIALS RECOMMENDATIONS

Preliminary Hydraulics Recommendations

The drainage recommendations in the District 1 Preliminary Drainage Recommendations (Attachment L), include the following:

Inlets: It was noted that the ground during and after rainfall gets covered with a thick layer of redwood needles and leaves that would cause clogging and maintenance problems if grates were used at the inlets. At the locations where the cut slope is too close to the shoulder, leaving an open pit is not recommended, in such cases, it would be advisable to build a type GO or GDO inlet with a specially fabricated grate.

Outlets: Some of the pipes in this project have failed outlets that require embankment reconstruction by rock fill, layered reinforced earth, or a retaining wall. The final choice is left to the designer, but in any case the culvert replacement would exit the embankment significantly above the natural ground elevation and would require a down drain pipe with a rock energy dissipator (RED) at the ground level. Such down drain must be of the same diameter as the culvert and anchored to the slope according to Standard Plans D87C.

Preliminary Materials Recommendations

The District Materials Laboratory recommendations for structural section, embankment and culvert type have been added to the project considerations. See Attachment M.

11. OTHER CONSIDERATIONS

Traffic Management Plan

A Traffic Management Plan (TMP) was prepared for this project and is included for reference as Attachment M. Significant traffic impacts are not anticipated provided the recommendations in the TMP are incorporated into the project. See Attachment N for details. It is expected that all construction activities affecting traffic would be performed under one-way reversible traffic control and shoulder closures. One-way traffic control shall be in conformance with the Caltrans Standard Plan T-13, "Traffic Control System for Lane Closure on Two-lane Conventional Highways". The maximum length of a closure is 1,800 ft. A minimum of one portable changeable message sign (PCMS) in advance of both ends of the construction site shall be required to notify the public of closures associated with this project. Additionally, Construction Zone Enhanced Enforcement Program (COZEEP) is recommended for this project.

Design Exceptions

Based on functional classification, traffic volumes and maintenance service levels, Route 254 in District 1 should be maintained at its present width and on its existing alignment. Physical constraints preclude compliance with the minimum Clear Recovery Zone (CRZ) standards at some locations. General geometric upgrades are beyond the scope of a culvert damage restoration project. On 4/21/09, John Steele, Design Coordinator to the North Region stated that he concurred with this statement and that no additional documentation is required.

12. FUNDING

A. CAPITAL COST

This PSR recommends a total of \$1,331,000 (2013/14) be programmed in the 2010 SHOPP Cycle for Construction Capital and right of way.

B. PROJECT SUPPORT

This project is a candidate for the Drainage System Restoration (201.151) funding in the 2010 State Highway Operational Protection Program (SHOPP). A summary of scheduled costs and resources are shown in the Programming Sheet. (Attachment N).

13. RISK MANAGEMENT

A Risk Management Plan was prepared for the project (Attachment O).

14. SCHEDULE

The tentative Project Schedule is shown in the table below.

HQ Milestones	Delivery Date
Begin Environmental Document (ED)	9/1/10
Circulate Draft ED	12/1/11
PA/ED	2/1/12
Begin R/W	5/1/12
PS&E	4/1/13
R/W Certification	7/1/13
Ready to List	7/15/13
Approve Contract	10/1/13
Contract Acceptance	10/1/14

15. DISTRICT CONTACTS

<u>Name</u>	<u>Title</u>	<u>Phone Number</u>
Juan C. Trupp	Transportation Engineer (Civil)	(707) 445-6458
Jeffrey Pimentel	Project Engineer	(707) 445-6358
Richard Mullen	Project Manager	(707) 441-5877
Royal McCarthy	Program Advisor	(707) 445-6382
Ilene Poindexter	Chief, Advance Planning	(707) 441-3969
Ralph Martinelli	Chief, Traffic Safety	(707) 445-6376
Troy Areseneau	Chief, Traffic Operations	(707) 445-6377
Sandra Rosas	Environmental Coordinator	(530) 741-4017
Dave McCanless	Senior Right of Way Agent	(707) 445-6424

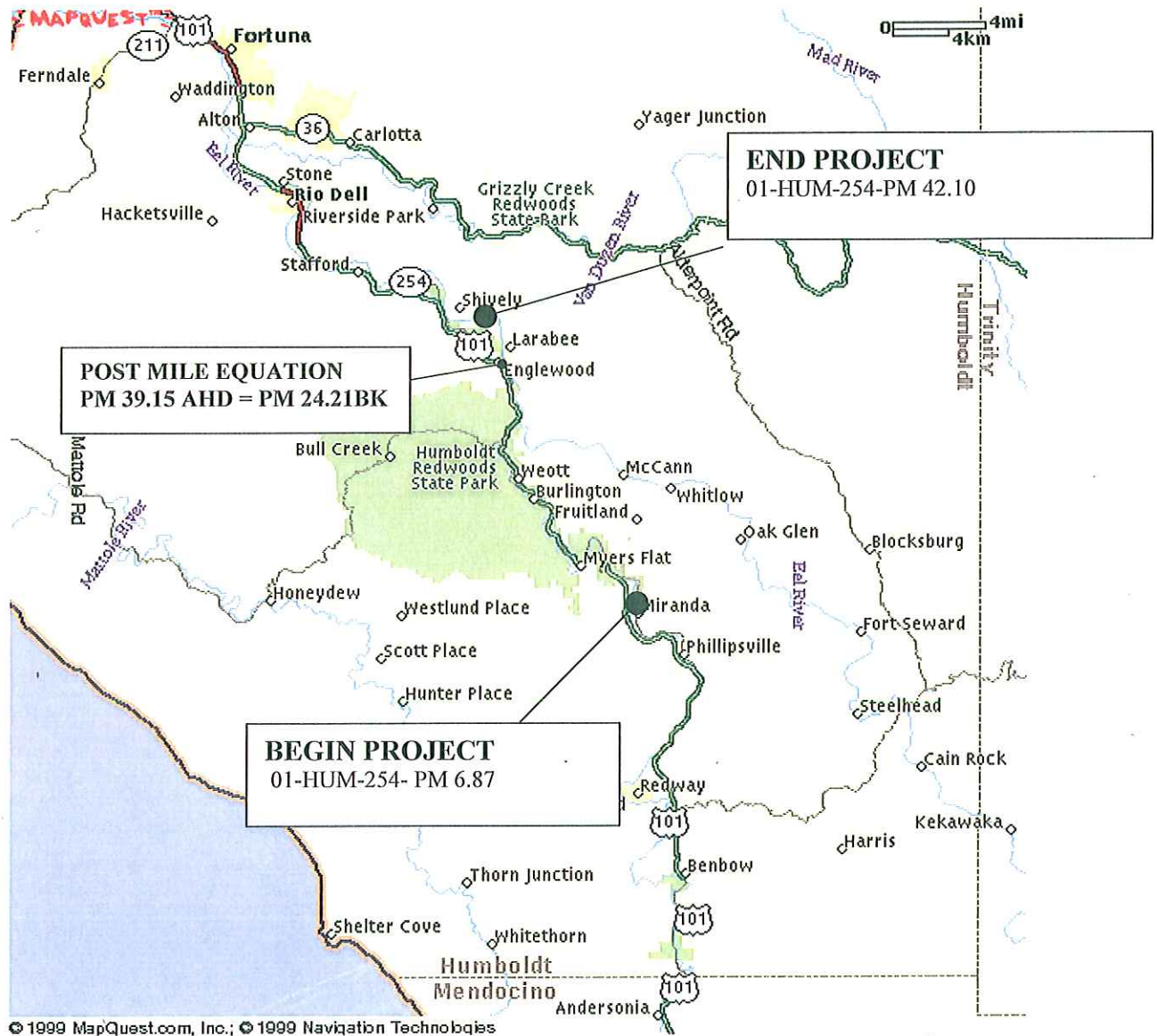
16. ATTACHMENTS

- A. Project Location Map
- B. Typical Sections
- C. Project Layouts
- D. Culvert Inventory
- E. Cost Estimate
- F. Transportation Management Plan
- G. Right of Way Data Sheet
- H. Preliminary Environmental Assessment Report, PEAR
- I. Storm Water Data Report
- J. Landscape Architecture Assessment Sheet
- K. Initial Site Assessment
- L. Preliminary Hydraulics Recommendations
- M. Preliminary Materials Recommendation
- N. Programming Sheet
- O. Risk Management

ATTACHMENT A

PROJECT LOCATION MAP

01-Hum-254-Various Locations
Culvert Rehabilitation
EA 01-40950K



LOCATION MAP

ATTACHMENT B

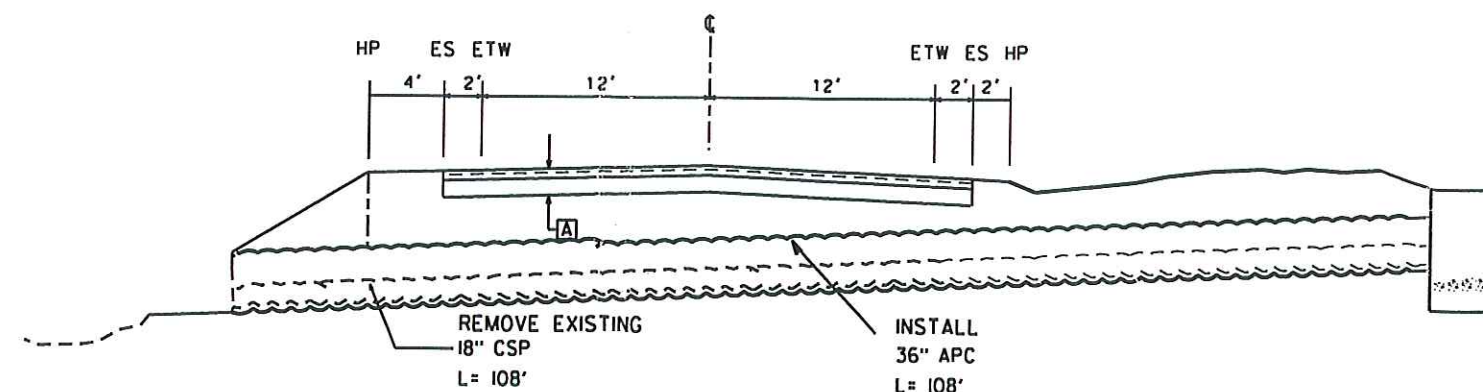
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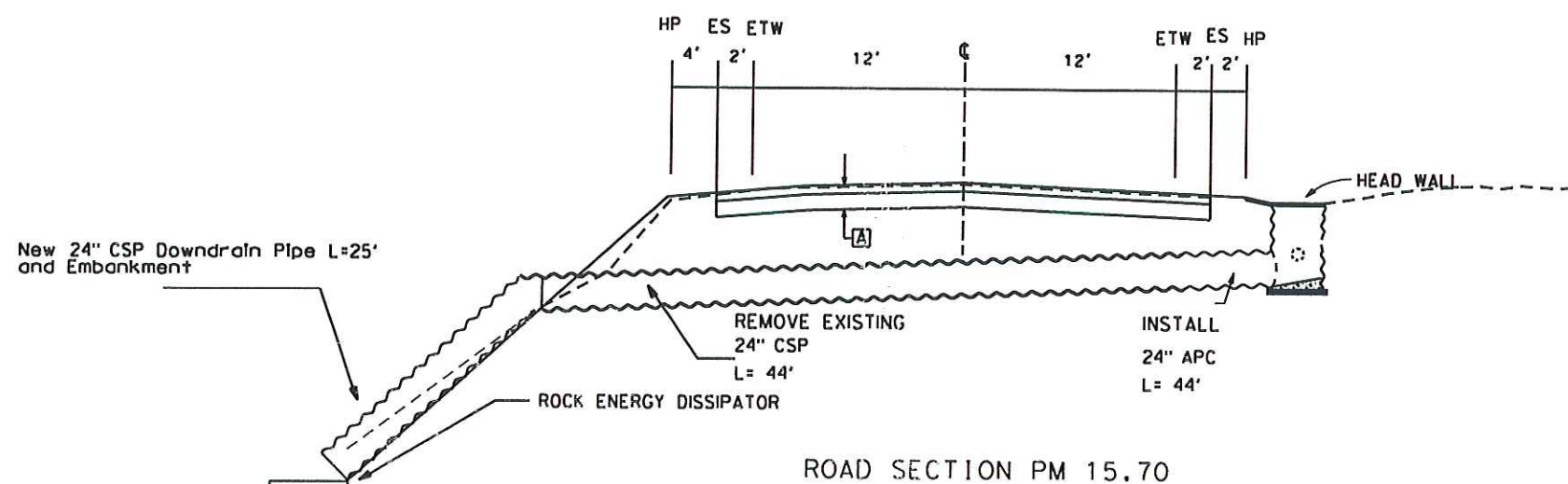
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

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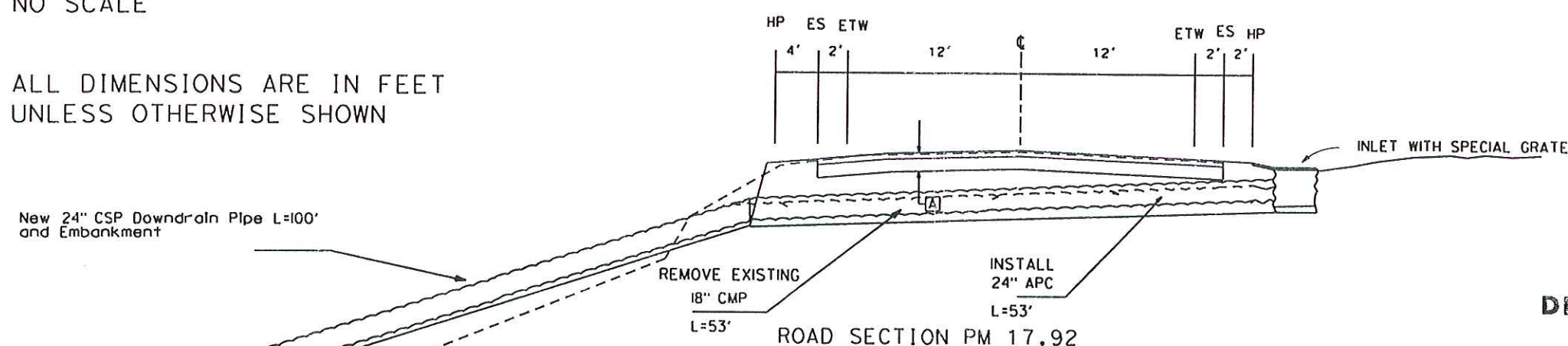
ROAD SECTION PM 6.87



ROAD SECTION PM 15.70

NO SCALE

ALL DIMENSIONS ARE IN FEET
UNLESS OTHERWISE SHOWN



ROAD SECTION PM 17.92

STRUCTURAL SECTION

- 0.35' HMA (Type A)
- 0.55' AB (Class 2)
- 0.50' AS (Class 2)

DRAINAGE SYSTEM RESTORATION

01-HUM-254

PM 6.87/ PM 42.13

TYPICAL SECTIONS

DESIGN STUDY ONLY

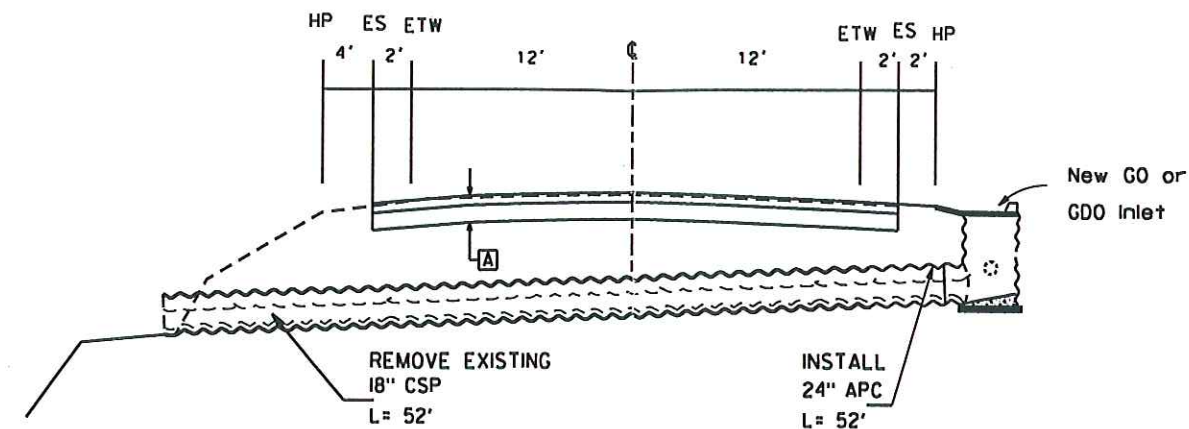
REVISOR
DATE
BY

CALCULATED/
DESIGNED BY
CHECKED BY

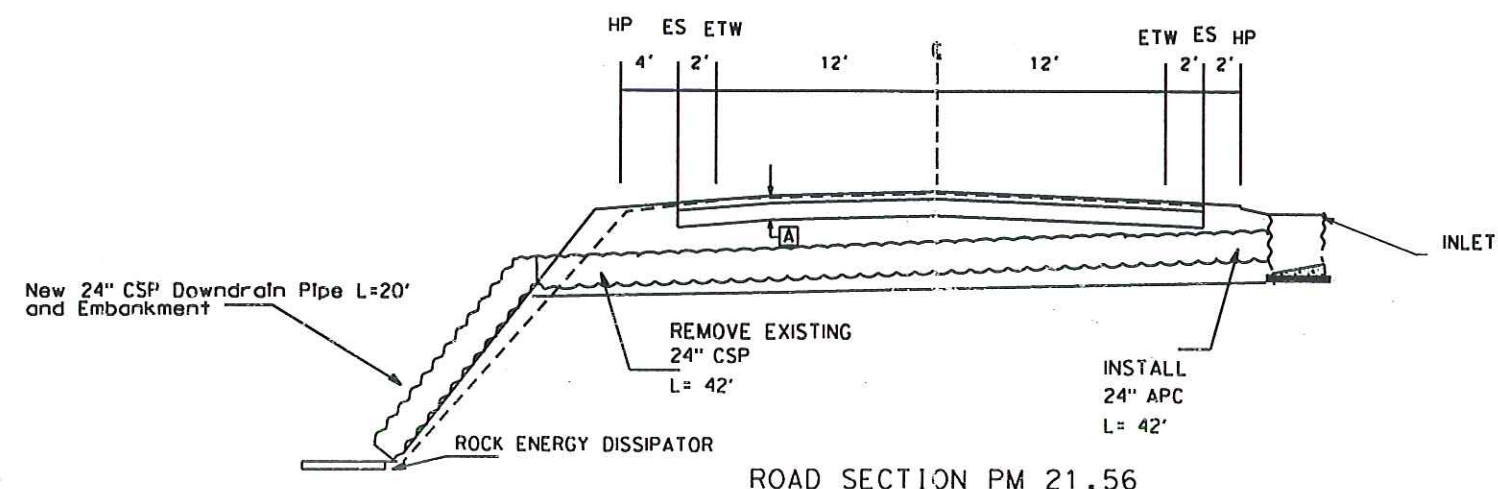
PROJECT ENGINEER

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT

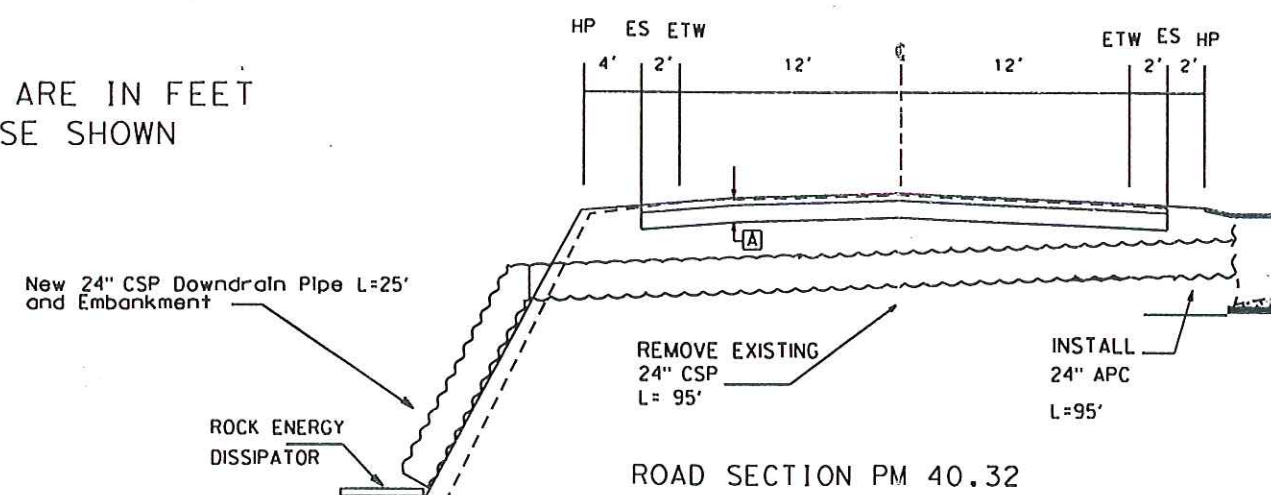
Caltrans



ROAD SECTION PM 19.59



ROAD SECTION PM 21.56



ROAD SECTION PM 40.32

STRUCTURAL SECTION

- [A] 0.35' HMA (Type A)
- 0.55' AB (Class 2)
- 0.50' AS (Class 2)

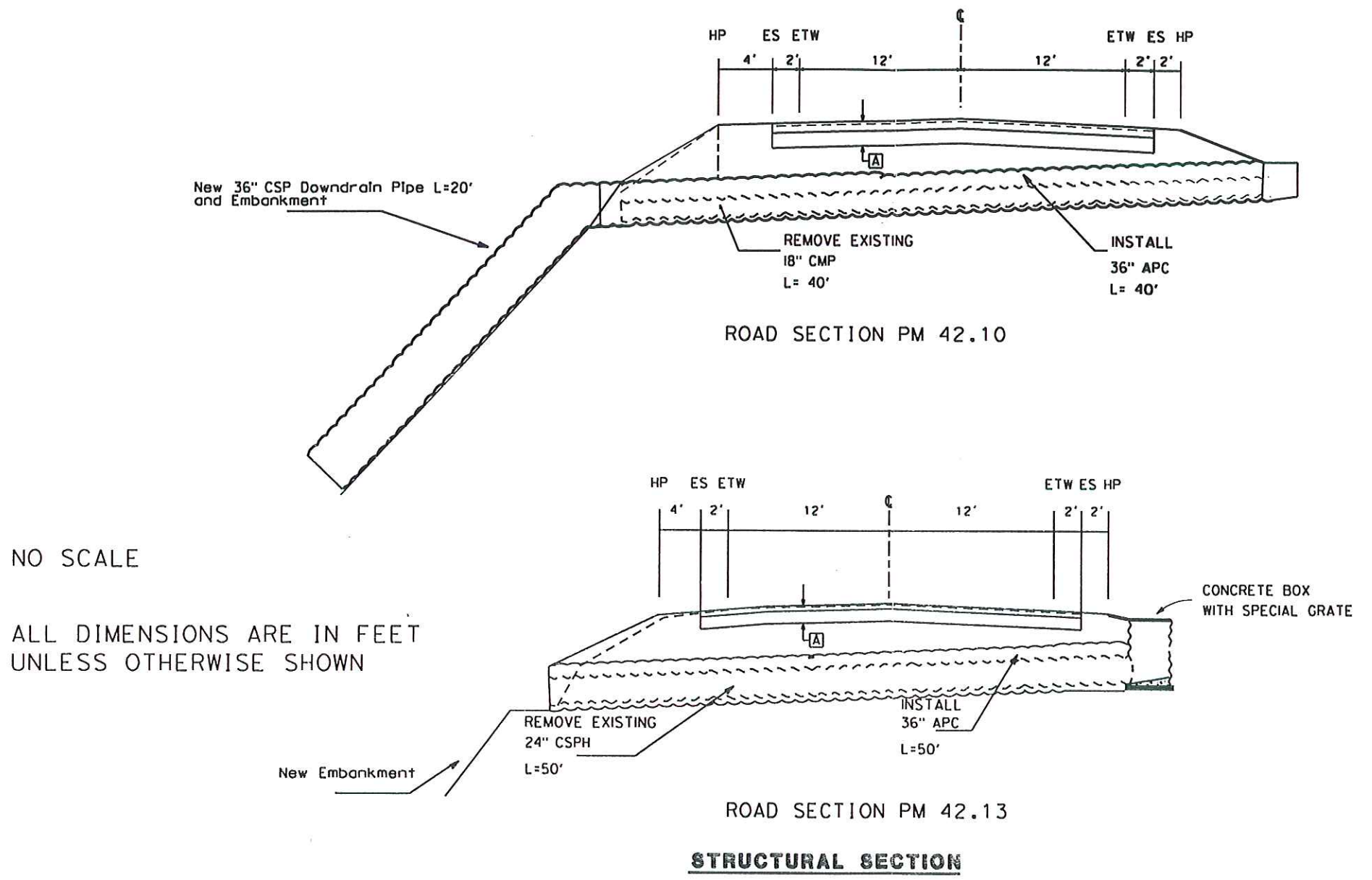
NO SCALE

ALL DIMENSIONS ARE IN FEET
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DESIGN STUDY ONLY

DRAINAGE SYSTEM RESTORATION

01-HUM-254
PM 6.87/ PM 42.13
TYPICAL SECTIONS



DRAINAGE SYSTEM RESTORATION

01-HUM-254

PM 6.87/ PM 42.13

TYPICAL SECTIONS

DESIGN STUDY ONLY

ATTACHMENT C

PROJECT LAYOUTS

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	HUM	254	6.87/42.13	1	7

REGISTERED CIVIL ENGINEER DATE
PLANS APPROVAL DATE
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REGISTERED PROFESSIONAL ENGINEER
No. Exp. CIVIL
STATE OF CALIFORNIA

01-HUM-254
PM 6.87

NOTE:

- 1 PLAN BASED UPON ASBUILT, RIGHT OF WAY AND FIELD REVIEW INFORMATION.
- 2 ONLY REDWOOD TREES HAVE BEEN SHOWN. OTHER TREES AND VEGETATIVE COVER ARE PRESENT.
- 3 PROTECT ALL EXISTING REDWOOD TREES.

LEGEND



WORK AREA



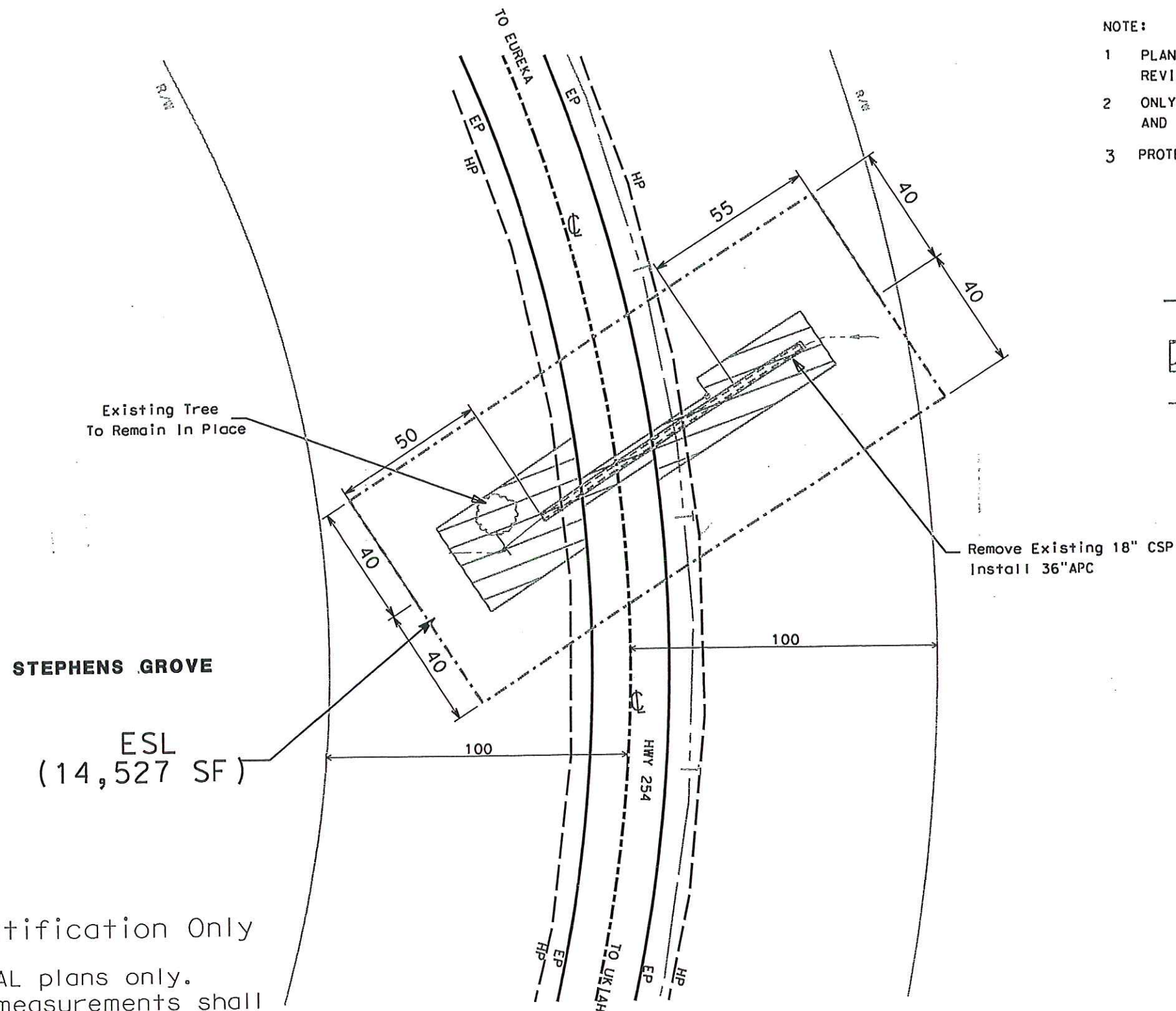
Environmental Study
Limits



REDWOOD TREES

ABBREVIATION

EP EDGE OF PAVEMENT
HP HINGE POINT
R/W RIGHT OF WAY
C CENTERLINE



For Project Identification Only

These are CONCEPTUAL plans only.
All dimensions and measurements shall
be verified for conforming with
Design Standards

PRELIMINARY
LAYOUT



SCALE
1" = 40'

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	HUM	254	6.87/42.13	2	7

REGISTERED CIVIL ENGINEER

DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER

No.

Exp.

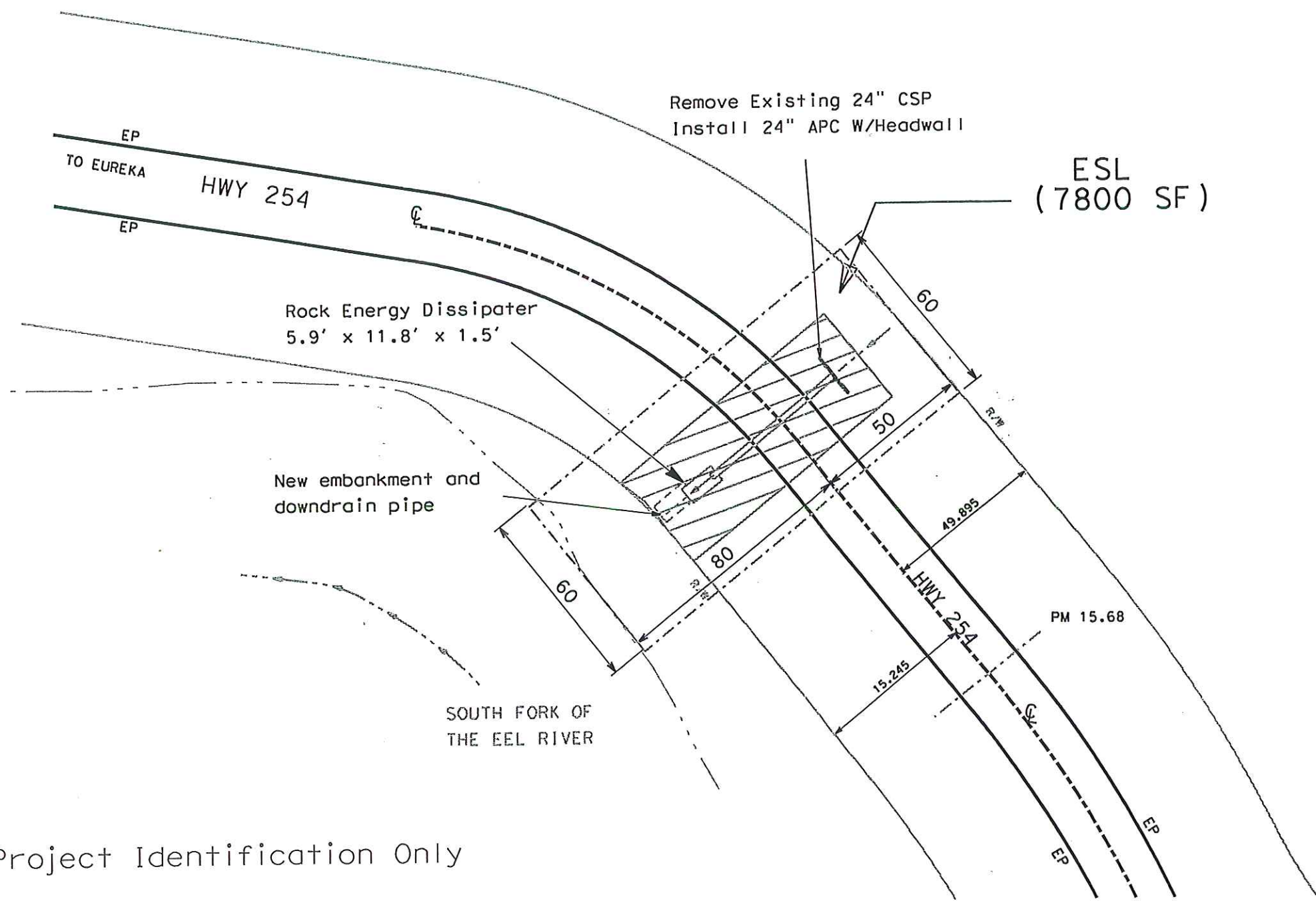
CIVIL

STATE OF CALIFORNIA

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01-HUM-254
PM 15.70

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LEGEND

- WORK AREA
- Environmental Study Limits
- REDWOOD TREES

ABBREVIATION

- EP EDGE OF PAVEMENT
- HP HINGE POINT
- R/W RIGHT OF WAY
- CL CENTERLINE



PRELIMINARY
LAYOUT

SCALE
1" = 40'

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED- DESIGNED BY	REVISOR	DATE
		CHECKED BY		

Dist	COUNTY	ROUTE	TOTAL MILES	PROJECT NO.	TOTAL SHEETS
01	HUM	254	6.87/42.13	4	7

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DATE

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EXP.

CIVIL

STATE OF CALIFORNIA

01-HUM-254
PM 19.59

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LEGEND



WORK AREA



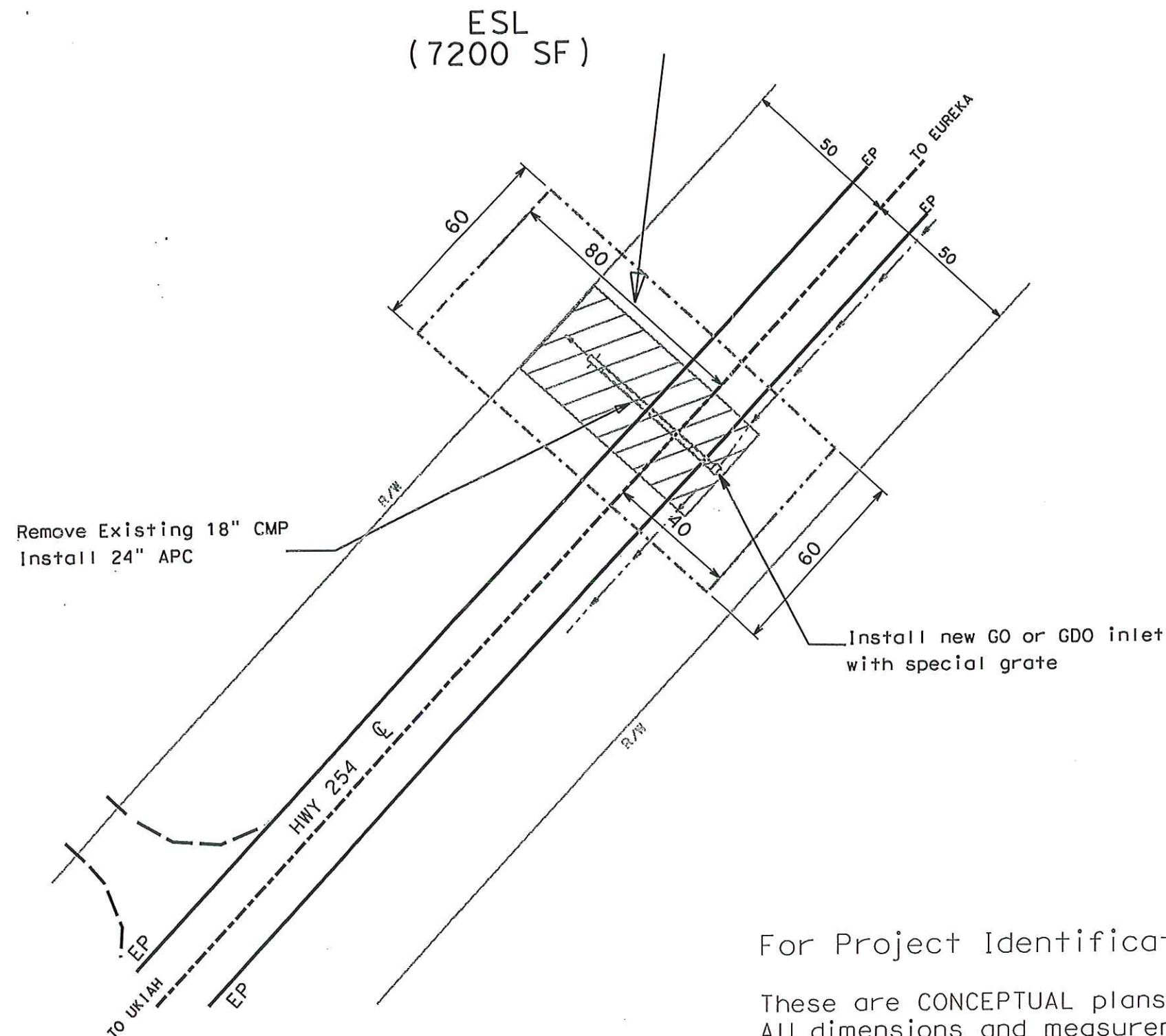
ENVIRONMENTAL STUDY
LIMITS



REDWOOD TREES

ABBREVIATION

EP EDGE OF PAYMENT
HP HINGE POINT
R/W RIGHT OF WAY
C CENTERLINE



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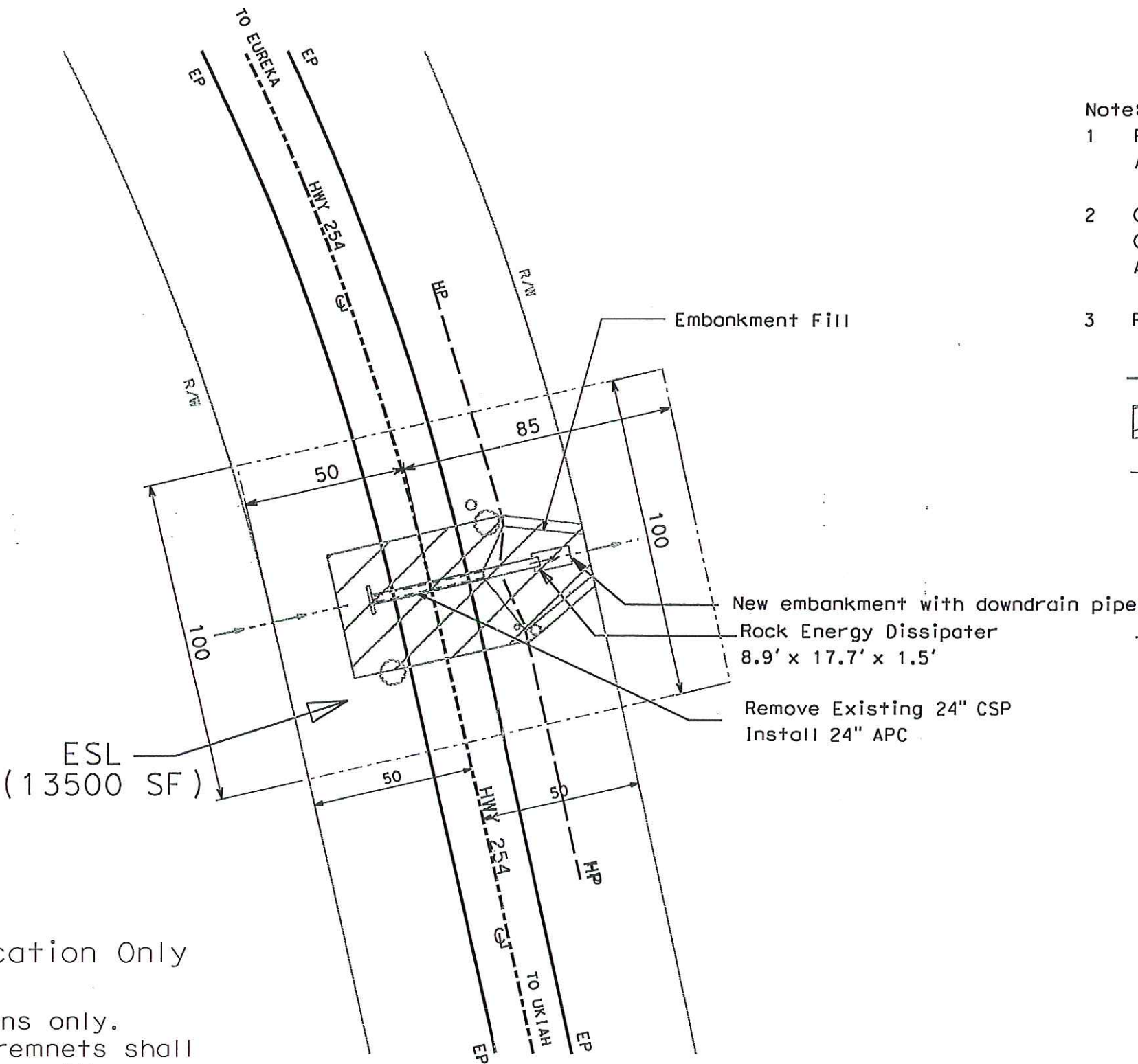
PRELIMINARY
LAYOUT

SCALE
1"= 40'



LAST REVISION DATE PLOTTED 03/04/04

01-HUM-254
PM 21.56



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LEGEND

	WORK AREA
	ENVIRONMENTAL STUDY LIMITS
	REDWOOD TREES

ABBREVIATION

EP	EDGE OF PAVMENT
HP	HINGE POINT
R/W	RIGHT OF WAY
CL	CENTERLINE

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Design Standards

PRELIMINARY
LAYOUT

SCALE
1" = 40'



- 1 PLAN BASED UPON ASBUILT, RIGHT OF WAY AND FIELD
REVIEW INFORMATION. SURVEYS ARE REQUIRED.
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AND VEGETATIVE COVER ARE PRESENT.
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Legend:

- WORK AREA (represented by a rectangle with diagonal hatching)
- ENVIRONMENTAL STUDY LIMITS (represented by a dashed line)
- REDWOOD TREES (represented by a cloud-like shape)

EP	EDGE OF PAYMENT
HP	HINGE POINT
R/W	RIGHT OF WAY
CL	CENTERLINE



These are CONCAPTUAL plans only.
All dimensions and measurements shall
be verified for conforming with
Design Standards

PRELIMINARY
LAYOUT

SCALE
1' = 40'

01-HUM-254
PM 42.10, PM 42.13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	HUM	254	6.87/42.13	7	7

REGISTERED CIVIL ENGINEER DATE _____

PLANS APPROVAL DATE _____

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CIVIL
STATE OF CALIFORNIA

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LEGEND



WORK AREA



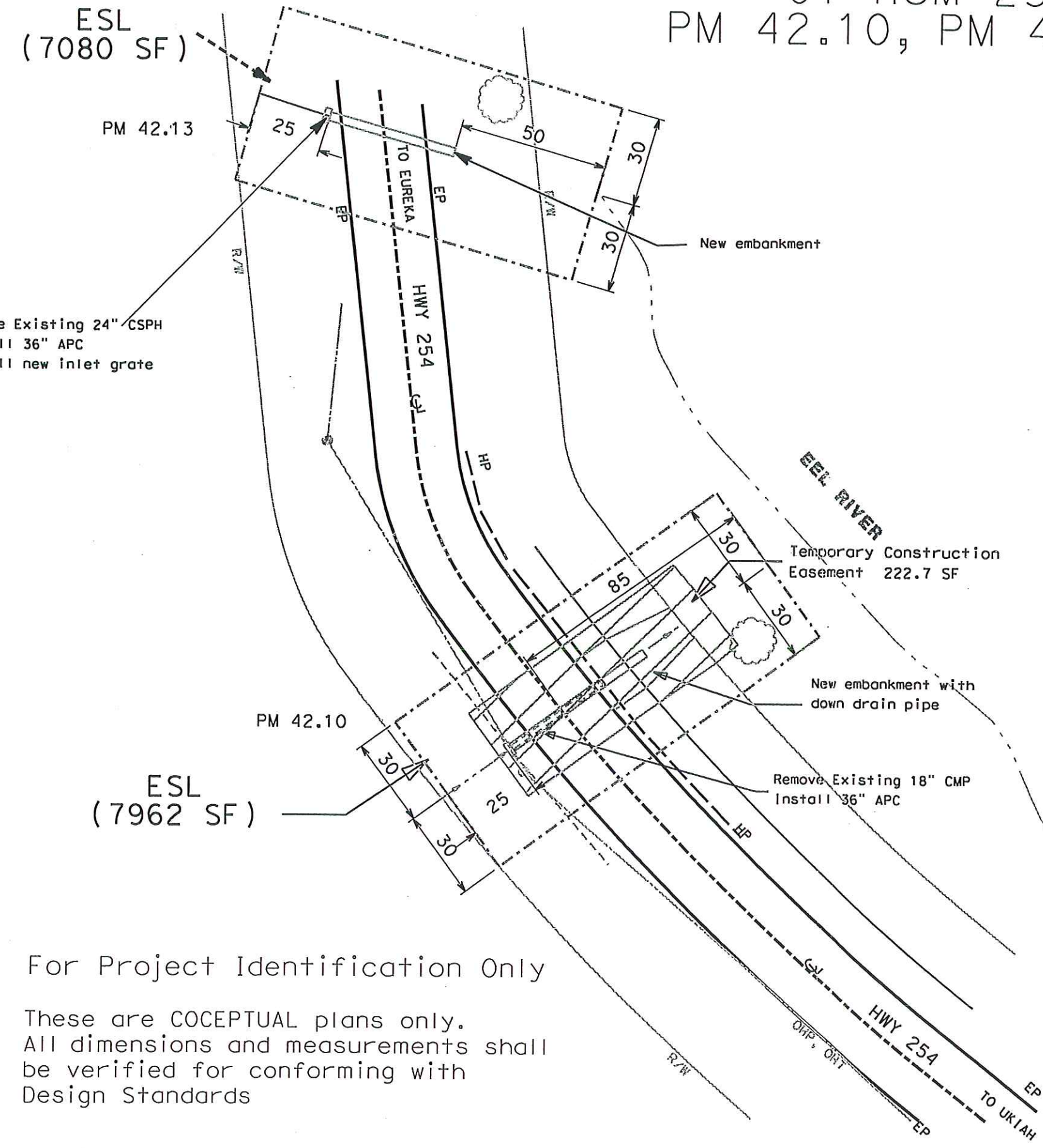
ENVIRONMENTAL STUDY
LIMITS



REDWOOD TREES

ABBREVIATION

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HP HINGE POINT
R/W RIGHT OF WAY
C CENTERLINE



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Design Standards

PRELIMINARY
LAYOUT



SCALE
1" = 40'

ATTACHMENT D

CULVERT INVENTORY

Table: LOCATION AND PROPOSED WORK

CULVERT	PM	EXISTING CULVERT TYPE AND SIZE	PROPOSED WORK	PERMITS REQUIRED
C1	6.87	18" CSP Length=108 ft	Remove and replace existing culvert with 36" APC (108' long) at same alignment. Inlet remains similar to existing, outlet remains similar to existing.	Waters of the US: Nonreporting Nationwide 3; 1601, 401, 404
C2	15.7	24" CSP Length=44 ft	Remove and replace existing rusted culvert with 24" APC (44' long) at same alignment. Inlet will be replaced with a concrete head wall w/ fill over the pipe, outlet need new embankment and down drain pipe and RED.	Water of US; Nonreporting Nationwide 3; 1601, 401, 404
C3	17.92	18" CMP Length=53 ft	Remove and replace existing culvert with 24" APC (53' long) at same alignment. Inlet new with special fabricated grate, outlet need a new embankment and down drain pipe (100' long).	No waters
C4	19.59	18" CMP Length=52 ft	Remove and replace existing culvert with 24" APC (52' long) at same alignment. Inlet new GO or GDO with specially fabricated grate, outlet remains similar to existing.	No waters
C5	21.56	24" CSP Length= 42 ft	Remove and replace existing damaged culvert with 24" APC (42' long) at same alignment. Inlet remains similar to existing, outlet need a new embankment with a down drain pipe (20' long) and RED.	No waters
C6	40.32	24" CSP Length=95 ft	Remove and replace existing damaged culvert with 24" APC (95' long) at same alignment. Inlet remains similar to existing concrete head wall, outlet need a new embankment with a down drain pipe (25' long) and RED.	Waters of the US: Nonreporting Nationwide 3; 1601, 401, 404
C7	42.10	18" CMP Length=40 ft	Remove and replace existing culvert with 36" APC (40' long) at same alignment. Inlet remains similar to existing, outlet need new embankment and down drain pipe (20' long).	Waters of the US: Nonreporting Nationwide 3; 1601, 401, 404
C8	42.13	24" CSPH Length= 50 ft	Remove and replace existing culvert with 36" APC (50' long) at same alignment. Inlet remains similar to existing concrete box but with a new specially fabricated grate, outlet need new embankment.	No waters

CMP= Corrugated metal pipe; APC= Alternate pipe culvert; DI= drop inlet; RED= Rock energy dissipater

ATTACHMENT E

COST ESTIMATE

Project Study Report-Cost Estimate



01-HUM-254

PM 6.87/42.13

EA 01-40950K

Program Code 201.151

Drainage System Restoration

SUMMARY OF PROJECT COST ESTIMATE (YEAR 2009)

TOTAL ROADWAY ITEMS	\$881,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$881,000
TOTAL RIGHT OF WAY ITEMS	\$217,225
TOTAL PROJECT CAPITAL OUTLAY COSTS	\$1,098,225
CALL	\$1,100,000

Reviewed by District Program Manager _____ Date _____

Approved by Project Manager _____ Date _____

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost
Clearing & Grubbing	1	LS	\$50,000	\$50,000
Structure Excavation (culvert)	621	CY	\$130	\$80,730
Place and Compact Embankment	440	CY	\$85	\$37,384
Imported Rocky Material	100	CY	\$130	\$13,000
Develop Water Supply	1	LS	\$2,500	\$2,500
Subtotal Earthwork				\$183,614
Section 2 Pavement Structural Section	Quantity	Unit	Unit Price**	Item Cost
Remove Hot Mix Asphalt	219	SQYD	\$35	\$7,665
Minor Hot Mix Asphalt	142	TON	\$245	\$34,790
Aggregate Base (Class 2)	146	CY	\$100	\$14,600
AC DiKe	100	LF	\$20	\$2,000
Minor Concrete (Headwall)	9	CY	\$1,250	\$11,250
Subtotal Pavement Structural Section				\$70,305
Section 3 Drainage	Quantity	Unit	Unit Price	Item Cost
24 in. Alternative Pipe Culvert	296	LF	\$175	\$51,800
24 in. Alternative Pipe Downdrain	212	LF	\$135	\$28,620
36 in. Alternative Pipe Culvert	204	LF	\$215	\$43,860
Steel Flared end section inlet	5	EA	\$960	\$4,800
Minor Concrete (Drainage Inlet)	8	EA	\$523	\$4,184
Minor Concrete (Modify Drainage Inlet)	2	EA	\$1,293	\$2,586
Misc. Iron and Steel grates	1,445	LB	\$4	\$5,780
Rock Energy Dissipater (light)	50	CY	\$153	\$7,650
Remove Culvert	463	LF	\$60	\$27,750
Subtotal Drainage				\$177,030
Section 4 Specialty Items	Quantity	Unit	Unit Price	Item Cost
Rock Slope Protection	210	CY	\$170	\$35,700
Structure Fill (culvert)	36	CY	\$203	\$7,316
Erosion Control	1	LS	\$10,000	\$10,000
Subtotal Specialty				\$53,016
Section 5 Traffic Items	Quantity	Unit	Unit Price	Item Cost
Reset Roadside Signs, PM & culvert markers	8	LS	\$275	\$2,200
Traffic Managemnt plan	1	LS	\$7,400	\$7,400
Markers, Striping, Delineators	1	LS	\$5,400	\$5,400
Subtotal Traffic Items				\$15,000
Traffic Additions (Added in "TOTAL SECTIONS 1 thru 5)			\$498,965	
Traffic Control System	1	LS	(6% Item subtotal)	\$29,938
Maintain Traffic	1	LS	(7% Item subtotal)	\$34,928
SUBTOTAL				\$64,865
TOTAL SECTIONS 1 thru 5				\$563,830

Section 6 Minor Items				
(Subtotal Sections 1 thru 5)	\$563,830	(x 5%)		\$28,192
TOTAL MINOR ITEMS				\$28,192
Section 7 Roadway Mobilization				
(Subtotal Sections 1 thru 6)	\$592,022 x (10%) =			\$59,202
TOTAL ROADWAY MOBILIZATION				\$59,202
Section 8 Roadway Additions	Quantity	Unit	Unit Price	Item Cost
Supplemental Work				
	\$592,022 x (5%)			\$29,601
Contingencies				
	\$592,022 x (25%) =			\$148,005
	\$ Per Hour	Hours Per Day	Work Days	
COZEEP setups @ \$100 per Hour Working 10 Hour Days	\$100	9	35	\$31,500
COZEEP setups @ \$200 per Hour Working 10 Hour Nights	\$200	9	10	\$18,000
Construction Office	RE Office (\$2200/month)			\$2,500
(Subtotal Sections 1 thru 6)				\$592,022
TOTAL ROADWAY ADDITIONS (Sections 7 & 8)				\$288,809

TOTAL ROADWAY ITEMS \$881,000

II. STRUCTURES ITEMS

SUBTOTAL STRUCTURES ITEMS		\$0
(Sum of Total Cost for Structures)		

Railroad Related Costs:	NA	
SUBTOTAL RAILROAD ITEMS		\$0

TOTAL STRUCTURES ITEMS	\$0
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III. RIGHT OF WAY ITEMS

A. Acquisition, including excess lands	\$625
B. Mitigation acquisition & credits	\$200,000
C. Project Development Permit Fees	\$11,000
D. Utility Relocation (State share)	\$5,000
E. Relocation Assistance (RAP)	\$0
F. Clearance/Demolition	\$0
G. Title and Escrow Fees	\$600

TOTAL RIGHT OF WAY ITEMS	\$217,225
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ATTACHMENT F


TRANSPORTATION MANAGEMENT PLAN

TRANSPORTATION MANAGEMENT PLAN

To: Matt Smith
Project Engineer

Date: 22 September 2008
File: HUM-254 PM 6.87/42.13
EA: 01-40950K

Drainage System Restoration
Culvert Improvements

From: Troy Arseneau, Chief 
District 1 Office of Traffic Operations

Project InformationLocation:

In Humboldt County, near Miranda, from 2.3 miles south of Miranda Post Office to 0.9 miles south of Bear Creek Bridge #4-12.

Type of Work:

Remove and replace CMP culverts with APC, place new drainage inlets, place Rock Energy Dissipaters, filling eroded areas and reconstructing roadway embankments, construct AC dikes, move fallen trees and place erosion control, and other drainage work as deemed necessary.

Anticipated Traffic Control:

One-way reversible traffic control.
Shoulder closure.
Intermittent closure.

Estimated Maximum Delay:

5 minutes during one-way reversible.
10 minutes during intermittent closure.

Peak Hour Traffic Volumes:

See Table 1.

Lane Requirement ChartIncluded:

Yes

Number of Working Days:

TBD.

Next Major Milestone and Date:

PSR - September/2009

RTL Date:

July/2013

District Traffic Manager/ TMPManager:

Troy Arseneau (707) 445-6377

TMP Coordinator:

Paul Hailey (707) 445-6419

Anticipated Traffic Impacts

Significant traffic impacts are not anticipated provided that the following recommendations are incorporated into the project. In conformance with Deputy Directive-60, District Lane Closure Review Committee approval is not required for projects with anticipated traffic delay less than 30 minutes.

Table 1: Location and Peak Hour Volume Information.

Highway Route HUM-254 / Location			Traffic Volumes (2013)	
Location #	PM	Lanes	Peak Hour (vph)	Peak Month ADT (vph)
1	06.87	2	380	1385
2	15.70	2	110	880
3	17.82	2	140	1150
4	19.59	2	150	1100
5	21.56	2	105	365
6	40.06	2	80	580
7	40.32	2	80	580
8	42.10	2	80	580
9	42.13	2	80	580

Recommendation

A request for an updated Transportation Management Plan shall be made during the design phase.

Hours of Work

- The full width of the traveled way shall be open for use by public traffic on Saturdays, Sundays, designated legal holidays and the day preceding designated legal holidays, after 3:00 p.m. on Fridays, and when construction operations are not actively in progress. If a legal holiday falls on a Monday the full width of the traveled way shall be open on the preceding Friday.

Public Notice

- Upon receipt of notice that the roadway width (including paved shoulder) for a direction of travel will be narrowed to less than 16 ft, the Resident Engineer shall promptly notify the District Permits Engineer.

- The District Public Information Office, (707) 445-6444, shall be contacted two weeks in advance of the start of construction.
- Any emergency service agency whose ability to respond to incidents will be affected by any lane closure must be notified prior to that closure.
- The Resident Engineer shall provide information to residents and businesses before and during project work that may represent a negative impact on commerce and travel surrounding the zone of construction. Funding shall be included in supplemental funds for public information.
- Include in a memo to the Resident Engineer that at least 5 days in advance of excavation work in the vicinity of possible Caltrans facilities, that Maintenance-Electrical Supervisor (825-0233) shall be contacted to locate existing Caltrans underground electrical facilities.

Traffic Control

- A maximum of two concurrent closures are permitted within the project limits. The closures shall be separated by a minimum of 5 miles.
- One-way traffic control shall be in conformance with the Caltrans Standard Plan T-13, "TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE ON TWO LANE CONVENTIONAL HIGHWAYS."
 - A minimum of 16 ft of paved roadway shall be open for use by public traffic, where available.
 - The maximum length of one-way traffic control closure shall be 1000 feet.
 - During one-way traffic control, additional advance flaggers will be required. All flaggers shall have continuous radio contact with personnel in the work area.
 - "Watch for Bicycles" signs shall be placed, in each direction of travel, prior to the construction zone.
 - In the event the roadway is restricted to less than 14 ft in width during one-way reversible traffic control, bicyclists shall be routed to share a motor vehicle lane and "Share the Road" signs shall be placed in each direction of travel prior to the construction zone.
- A shoulder closure consisting of at least one Shoulder Work Ahead advance warning sign and channelizing devices shall be used when work occurs within

6 ft of the edge of traveled way. Channelizing devices shall be placed 200 ft in advance of, and adjacent to the work zone with a maximum distance of 50 ft between channelizers.

- During construction, when one-way control is in effect, the road may be closed and public traffic stopped for periods not to exceed 5 min. After each closure, all accumulated traffic shall be allowed to pass through the work before another closure is made.
- A minimum of one PCMS in advance of both ends of the construction site shall be required in order to notify the public of the closures related to this project.
- Access to side roads and residences shall be maintained at all times. When work or traffic queues extend through an intersection, additional traffic control will be required at the intersection.
- If traffic is to be placed on unpaved surfaces over night, advanced flashing beacons on the advance signing as shown in Standard Plan T-13 shall be required. Flashing beacons on all four advance signs shall be required where possible. When placing flashing beacons, care shall be taken to avoid impacting inhabited dwellings with the light.
- If persons with disabilities (e.g. hearing, visual, or mobility) are found to use this facility, the temporary traffic control measures mentioned in the California MUTCD Chapter 6D shall be incorporated to accommodate disabled pedestrians through the work zone.

Contingency Plan

The contractor shall prepare a contingency plan for reopening closures to public traffic. The Contractor shall submit the contingency plan for a given operation to the Engineer within one working day of the Engineer's request. Contingencies for unanticipated delays, emergencies, etc. shall be coordinated between the RE and the Contractor.


Approval

Approved by:



Transportation Management Plan Coordinator

Approved by:



District Traffic/ TMP Manager

TAA/cwk

CC: 1)TAArseneau, 2)JCandalot
1)RMMartinelli, 2) MABrady, 3)MGDavenport
IDPoindexter
RDMullen
HLQuintrell
RLingford
AJones

ATTACHMENT G

RIGHT OF WAY DATA SHEET

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
RIGHT OF WAY DATA SHEET

REVISED



Date: June 30, 2009

1-HUM-254-PM 6.87/42.13
 E.A. 40950K
 Rehabilitate culverts in Humboldt County near
 Miranda from 2.3 miles south of Miranda Post
 Office to 0.9 mile south of Bear Creek Bridge #4-
 12

1. Right of Way Cost Estimate: Alternate No. 1

	Current Value Future Use	Escalation Rate	Escalated Value
A. Total Acquisition Cost	\$625	5%	\$761
B. Mitigation acquisition & credits	\$200,000	5%	\$243,622
C. Project Development Permit Fees	\$11,000	5%	\$13,399
Subtotal	\$211,625		\$257,782
D. Utility Relocation (State Share) (Owner's share: \$20,000)	\$5,000	5%	\$6,091
E. Relocation Assistance (RAP)	\$0		\$0
F. Clearance/Demolition	\$0		\$0
H. Title & Escrow	\$600	5%	\$731
I. Total Estimated Right of Way Cost	\$217,225	Rounded	\$265,000
J. Construction Contract Work	\$0		

2. Current Date of Right of Way Certification

July 15, 2013

3. Parcel Data:

Type	Dual/Appr	Utilities	RR Involvements
X 0		U4 - 1 1	None X
A 3		- 2 0	C&M Agrmt
B 2		- 3 0	Svc Contract
C 0	0	- 4 0	Easements
D 0	0	U5 - 7 2	Rights of Entry
		- 8 0	Clauses
		- 9 1	
Total 5			
Areas:			Misc. R/W Work
R/W: 0.06 Ac.			RAP Displ N/A
Excess: N/A	No. Excess Pcls: 0		Clear/Demo N/A
Mitigation: 1.5 Ac.			Const Permits N/A
			Condemnation 0
			USA Involvement No

RIGHT OF WAY DATA SHEET

4. Are there any major items of construction contract work?

Yes _____ No X

5. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.).

The project to replace failing culverts and improve drainage problems at various locations will require acquisition of a permanent easement and three temporary easements from one property owner, the CA Department of Parks and Recreation.

6. Are any properties acquired for this project expected to be rented, leased, or sold?

Yes _____ No X

7. Is there an effect on assessed valuation?

No X

Yes _____ Not Significant _____

8. Are utility facilities or rights of way affected?

Yes X No _____

9. Are railroad facilities or rights of way affected?

Yes _____ No X

10. Were any previously unidentified sites with hazardous waste and/or material found?

Yes _____ None Evident X

11. Are RAP displacements required?

Yes _____ No XNo. of single family No. of business/nonprofit No. of multi-family No. of farms

Based on Draft/Final Relocation Impact Statement/Study dated N/A
it is anticipated that sufficient replacement housing (will/will not) be available without
Last Resort Housing.

12. Are there material borrow and/or disposal sites required?

Yes _____ No X

13. Are there potential relinquishments and/or abandonments?

Yes _____ No X

14. Are there any existing and/or potential airspace sites?

Yes _____ No X

15. What type of mitigation is required for the project?

Wetland/Riparian mitigation will be required for the project.

16. Indicate the anticipated Right of Way schedule and lead time requirements. (Discuss if district proposes less than PMCS lead time and/or if significant pressures for project advancement are anticipated.)

Right of Way Lead Time will require a minimum of 15 months after we receive first appraisal maps, utility conflict maps, and the necessary environmental clearance and freeway agreements have been approved and obtained. Additionally a minimum of 12 months will be required after receiving the last appraisal map to Right of way for certification.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
RIGHT OF WAY DATA SHEET

17. Is it anticipated that Caltrans will perform all Right of Way work?
Yes X No

Evaluation Prepared By:

Right of Way: Robert Close
ROBERT CLOSE

Date 07/02/09

Reviewed By:

RW Project Coordinator: Audrey E. Oakley
AUDREY OAKLEY

Date 7/3/09

I have personally reviewed this Right of Way Data Sheet and all supporting information. I certify that the probable Highest and Best Use, estimated values, escalation rates, and assumptions are reasonable and proper, subject to the limiting conditions set forth, and I find this Data Sheet to be complete and current.

RECOMMENDED FOR APPROVAL

Dave M. McCannless
DAVE M. McCANLESS,
Senior Right of Way Agent
Project Delivery Branch
Eureka

7/2/09
Date

APPROVED:

Walter E. Bird
WALTER E. BIRD,
North Region Right of Way Manager
Eureka/Redding

7/13/09
Date

1. Name of Utility Companies Requiring Verification Only:

Pacific Gas & Electric Company (PG&E) - Gas
Pacific Gas & Electric Company (PG&E) - Electric

2. Name of Utility Companies Requiring Relocations:

AT&T

Number of JUA's or CCUA's required for this project:

None

3. Additional information concerning utility involvements on this project:

4. PMCS Input Information

Total estimated cost of State's obligation for utility relocation on this project:

Potholing: \$ 5,000

Relocation \$

Total: \$ 5,000

Escalation Rate 5 %.

(Owner's Share: \$ 20,000)

Utility Involvements

U4-1	1	U5-7	2
-2		-8	
-3		-9	1
-4			

Prepared By:

Dan Kaiser
DAN KAISER
Right of Way Utility Estimator

7/2/09
Date

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
MITIGATION INFORMATION SHEET

E.A. 40950K
1-HUM-254-PM 6.87/42.13

1. Is mitigation required for the project?

Per Allison Kunz, Project Biologist. [Phone: (530) 741-4103], it is anticipated that the project will require wetland / riparian mitigation.

2. What type of mitigation is needed for the project?

Wetland/Riparian mitigation will be required for the project.

3. List any Resource Agency that will be involved with mitigation.

US Army Corps of Engineers
CA Department of Fish and Game

4. What is the method of Mitigation?

Number of fee acquisition parcels, Conservation
Easements, and/or Option agmts required:

1

Mitigation Bank: (yes/no) No

In-lieu payment: (yes/no) No

Other: (describe) _____

5. PMCS Input Information

Number of Acres/Credits

1.5

Estimated Cost

\$200,000

Prepared By:



Robert Close

Right of Way Mitigation Estimator

ATTACHMENT H

PRELIMINARY ENVIRONMENTAL ASSESSMENT REPORT



PRELIMINARY ENVIRONMENTAL ANALYSIS REPORT

1. Project Information

District 1	County HUM	Route 254	PM 6.78/42.13	EA 01-40950K
Project Title: <i>Brief descriptive phrase, e.g., CAPM, Curve Re-alignment, Passing Lane, etc.</i> Culvert Rehabilitation at 8 locations				
Project Manager Richard Mullen			Phone # 7074415877	
Project Engineer Jeffrey Pimentel			Phone # 5107931057	
Environmental Office Chief/Manager Sandra Rosas			Phone # 5307414017	
PEAR Preparer Darla Tate			Phone # 5307404839	

2. Project Description

Purpose and Need

Write a concise statement of the project purpose and need. It should be consistent with the purpose and need statement in the PSR.

This project is necessary because the culverts are deteriorating, resulting in insufficient drainage capacity. Also, the embankment is failing at specific culvert locations.

The purpose of this project is to improve drainage systems and reduce erosion to comply with storm water regulation within the project limits.

Description of work

Write a brief summary of the proposed work that will be done. Include work required that is incidental to the project, such as: access roads, utility relocation, de-watering, etc

All culverts are located within Humboldt Redwoods State Park, and most are adjacent to the Eel River, the South Fork of the Eel River, or Chad Creek. Proposed drainage improvements include but are not limited to:

- Placement of rock slope embankments
- Placement of energy dissipaters
- Installation of downdrains
- Raising existing drainage inlets (DI)
- Installing new DIs
- Replacing alternative pipe culverts (APC)
- Constructing drainage swales
- Reconstructing roadway embankments where eroded

Below is the list of the culverts for the project:

- 1) 01-Hum-254- PM 6.87;
- 2) 01-Hum-254- PM 15.70;
- 3) 01-Hum-254- PM 17.92;
- 4) 01-Hum-254- PM 19.59;
- 5) 01-Hum-254- PM 21.56;
- 6) 01-Hum-254- PM 40.32;
- 7) 01-Hum-254- PM 42.10; and
- 8) 01-Hum-254- PM 42.13.

Alternatives

Identify all project alternatives (including no-build). If alternatives are no longer being considered, state why. Do not select or identify a preferred alternative. Describe each alternative still under consideration.

Two alternatives are under consideration: a no build and the alternative described above.

3. Anticipated Environmental Approval

Check the anticipated environmental determination or document for the proposed project in the table below.

CEQA		NEPA	
Environmental Determination			
Statutory Exemption	<input type="checkbox"/>		<input type="checkbox"/>
Categorical Exemption	<input type="checkbox"/>	Categorical Exclusion	<input checked="" type="checkbox"/>
Environmental Document			
Initial Study or Focused Initial Study with Negative Declaration or Mitigated ND	<input checked="" type="checkbox"/>	Environmental Assessment with Finding of No Significant Impact	<input type="checkbox"/>
Environmental Impact Report	<input type="checkbox"/>	Environmental Impact Statement	<input type="checkbox"/>
CEQA Lead Agency (if determined):		Caltrans	
Estimated length of time (months) to obtain environmental approval:		24	
Estimated person hours to complete identified tasks:		3709	

4. Special Environmental Considerations

For each viable alternative, summarize below any special processes such as NEPA/404, seasonal constraints, Section 7, Section 4(f) that may affect project delivery and require unusual, exceptional, or extended environmental processes.

Section 4(f) of the Department of Transportation Act (49 U.S.C. 303):

A Section 4(f) study would be required to evaluate the effects to publicly own public parks, recreational areas, or wildlife or waterfowl refuges officially designated as such, because the culverts are located in Humboldt Redwoods State Park. For culverts located at PMs 15.7, 17.82, & 40.32 a temporary construction easement would be required. At PM 40.32, a permanent construction easement would be required.

Section 7 pursuant to the Federal Endangered Species Act:

Either Section 7 informal or formal consultation may be required for federally endangered species that may be located within the project area. Caltrans would consult with the US Fish and Wildlife Service (USFWS) regarding the impacts to endangered species. Caltrans would prepare a Biological Assessment (BA) and USFWS would render a Biological Opinion (BO) based on the BA. The BO normally takes approximately one year to receive approval from USFWS. The BO timeline starts when the BA is submitted to the USFWS.

5. Anticipated Environmental Commitments

For each viable alternative, prepare briefly summarize the anticipated environmental commitments by impacted resource. If commitments have been made, include a copy of the ECR. For standard PSRs, include a cost estimate for each environmental commitment. Include the total cost of all environmental commitment costs in Item 8. PSR Summary Statement below. Reference PEAR Environmental Commitments Cost Estimate.

Wetlands:

If wetland areas were impacted, a USACE 404 permit would be required. Mitigation would be implemented based on the USFWS in lieu fee schedule identified in Attachment D.

These possible impacts (Waters of the US, riparian, and wetlands) fall under the jurisdiction of USACE, North Coast Regional Water Quality Control Board (RWQCB), and CA Department of Fish and Game (CDFG). Coordination with all these agencies would be required to determine impacts and mitigation method and cost. In-water work will be conducted during the dry/low flow season (May 15 to October 15).

Section 7 Consultation for Federally Listed Endangered Bird Species:

Depending on the impacts, informal or formal consultation would be required between Caltrans and the USFWS to determine impacts and mitigation and/or avoidance measures.

Formal: preparation of Biological Assessment (BA) would be prepared for the Marbled Murrelet and Northern Spotted Owl. The USFWS would render a Biological Opinion (BO). Avoidance measures and/or mitigation would be identified in both the BA and BO such as work windows: See Attachment C - Gantt Chart for timelines/work windows.

Informal consultation would occur if construction could not occur during the work windows. Avoidance measures and/or mitigation would be identified in both the BA and BO and agreed upon by the USFWS. See Attachment C - Gantt Chart for timelines/work windows.

6. Permits and Approvals

Include timelines for acquiring permits or agreements. Reference PEAR Environmental Commitments Cost Estimate.

- * A RWQCB Section 401 Water Quality Certification would be required, taking approximately 6 months to obtain. See Attachment "Dredge and Fill" for fees and Attachment D for permit costs.

- * A USACE Section 404 permit (reporting) would be required, taking approximately one year to obtain. See Attachment D for permit costs.

- * A CDFG Section 1602 Streambed Alteration Agreement would be required, taking approximately 90-120 days would be obtained. See Attachment D for permit costs.

- * A Section 7 consultation for Federally Listed Endangered Species: either formal or informal consultation with the USFWS would be required; approximately 1 year would be required to obtain concurrence/approval from this responsible agency. The type of consultation (formal or informal) between Caltrans and USFWS is dependent on the degree of impacts and compliance with work windows. No cost for consultation & approval apply.

- * A Section 4(f) study may be required because the project is located in Humboldt Redwoods State Park. This law requires Caltrans to determine the project's effects to publicly owned parks, recreational areas, or wildlife or waterfowl refuges officially designated as such. Work on the property within the park would require approval and coordination with the Park. Cost would be incurred if Caltrans acquires property from the Park.

7. Level of Effort: Risks and Assumptions

See Section 5.2 PEAR Handbook regarding important considerations that can affect the level of effort and resources needed not only for the environmental document but also for the PEAR scoping document.

Assumptions:

Assumes: A Section 4(f) study or documentation may be required to determine the effects to publicly owned public parks, recreational areas, or wildlife or waterfowl refuges officially designated as such, if construction staging or access affects the use of the Humboldt Redwoods State Park (Park). Coordination may be required to obtain the easement within the Park.

Assumes: Formal or informal consultation between Caltrans and the USFWS, requiring at least one year to obtain approval in the form of a BO.

Assumes: No fish passage mitigation would be required at any of the culvert locations.

8. PEAR Technical Summaries

Use brief paragraphs focused on topics that will need environmental review. Indicate the absence of issues to document that they were considered. Refer to the Environmental Studies Checklist when preparing the following summaries. Make a separate statement for each viable alternative. See the PEAR Handbook Exhibit 3 for examples. These paragraphs should be based upon the technical summary provided by each specialist to the generalist who is writing the PEAR.

- 8.1 Land Use: Under Section 4(f) of the Department of Transportation Act (49 U.S.C. 303), a Section 4(f) study/documentation would be required to evaluate impacts to the Park because the culverts are located in Humboldt Redwoods State Park. For culverts located at PMs 15.7, 17.82, and 40.32 a temporary construction easement would be required. At PM 40.32, a permanent construction easement would be required. The proposed project is not expected to have any effects on land use such as businesses or residents.
- 8.2 Growth: The proposed project is not expected to have any impacts on growth.
- 8.3 Farmlands/Timberlands: The proposed project is not expected to have any farmland impacts. No farmland has been identified in the project area.
- 8.4 Community Impacts: The proposed project is not expected to have any effects on the local community or economy. The project location is not located near or within the city limits. Most of this section of SR 254 is located in the Humboldt Redwoods State Park. The road is a popular tourist destination as the corridor winds through one of the larger old growth redwood forest stands in Northern California.
- 8.5 Visual/Aesthetics: A visual assessment will be required. Most of the culvert repair activities will create minimal impacts to the visual environment within the project area. Several measures that will be incorporated to reduce the visual impacts to include replanting, appropriate soil, rock energy dissipators, and stumps or downed logs to remain on site.
The project area is located parallel to the Eel River in the Northern California Coast Range on two sections of "The Avenue of the Giants." The southern eight culverts extend from Phillipsville to Englewood and the northern three culverts are located north of Redcrest. Dominant vegetation coverage includes redwood, Douglas fir, Tan oak, madrone, Bigleaf maple, Red alder, California laurel, huckleberry, Creek dogwood, Salmonberry and Poison oak.
- 8.6 Cultural Resources: According to the January 2004 Programmatic Agreement (PA), projects involving minor operational improvements, such as culvert replacement, might be treated as screened undertakings. After a field and background review, the Professionally Qualified Staff (PQS), in accordance with the PA, may determine that the undertaking is exempt from further review if there is no potential to affect historic properties. The screening process may include the following procedures: delineate an Environmental Study Limit (ESL)/Area of Potential Effects (APE); field review of the project area; conduct a records search at the North Coastal Information Center; Coordinate with interested parties (e.g., local historical societies, the Native American Heritage Commission, and local Native American representatives); and prepare a memo that documents the screening process and conclusions for inclusion in the project file. If the screening process concludes

that the project cannot be exempted from further review, the following additional tasks may be required to comply with Section 106 of the National Historic Preservation Act: obtain Permits to Enter (PTE) for any portion of the ESL that is outside of the existing right-of-way; conduct an archaeological survey and prepare an Archaeological Survey Report; prepare a Historic Resources Evaluation Report (HRER), if necessary; prepare a Historical Resources Compliance Survey Report (HRCR); and coordinate with the State Office of Historic Preservation, if necessary. No properties listed within the National Register of Historic Places, California Historical Landmarks, California Points of Historical Interest, California Register of Historical Resources, or California Inventory of Historic Resources are present within the project area vicinity. Project files reveal that a Caltrans archaeologist previously surveyed eight of the nine culvert locations (Negative Historic Resource Clearance Report for Culvert Rehabilitation, Humboldt County, California, 01-HUM-254, P.M. 6.87-42.10/K.P. 11.05-67.75, EA 01-409500, by Scott Williams, December 2000). This prior survey, however, encompassed only proposed work areas and not the larger ESLs as currently defined, and did not include the possible staging area at P.M 20.80.

- 8.7 Hydrology and Floodplain: A Floodplain Evaluation Report Summary (FERS) was prepared on 11/17/2008. No significant impacts or increases in floodwater elevations are expected due to the project. The project intends to alleviate floodwater on the roadway.
- 8.8 Water Quality and Storm Water Runoff: A Preliminary Drainage Report, 11/10/2008, was prepared. Consultation with the RWQCB will be required during PA&ED and PS&E project phases. The project would require a 401 Certification due to work at the culverts. The permit conditions will determine the appropriate water quality measures.
- 8.9 Geology, Soils, Seismic and Topography: The project is not expected to have any effects on geology, soils, seismic or topography.
- 8.10 Paleontology: The project is not expected to have any effects on paleontology resources.
- 8.11 Hazardous Waste/Materials: An Initial Site Assessment (ISA) was conducted. The ISA found that the project likely has only nominal hazardous waste issues related to lead. The yellow paint or thermoplastic stripe that will be removed during pavement trenching is known to contain lead. The contractor will also excavate soil adjacent to the highway that is likely impacted with Aerially Deposited Lead (ADL). Although it is not likely that hazardous waste will be generated on this project, the fact that lead is present will necessitate that the contractor prepare a Lead Compliance Plan (LCP) that addresses the yellow paint/thermoplastic and ADL in the soil. For the purposes of determining the appropriate environmental documents required for the project, the work site(s) should not be considered to be on the Hazardous Waste and Substances Site List (Cortese List).
- 8.12 Air Quality: Under the current scope, the project is exempt from all air quality conformity analysis requirements per Table 2 of 40 Code of Federal Regulations (CFR) §93.126, subsection, "Other" (Plantings, landscaping, etc.).
- 8.13 Noise and Vibration: The project does meet the definition of a Type 1 project as specified in 23 CFR Part 772 (Procedures for Abatement of Highway Traffic Noise and Construction Noise). Therefore, no traffic noise analysis is required. During construction, however, noise

may be generated from the contractor's equipment and vehicles, which is a temporary noise source and can be avoided and/or minimized by implementation of Caltrans Standard Specifications.

- 8.14 Energy and Climate Change: The project is expected to have the low to no potential for climate change impacts. The environmental document may require a qualitative discussion regarding the operation of the project.

8.15 Biological Environment:

- 8.16 This project may have impacts on biological resources within the area. Further biological surveys will be necessary to determine the presence of sensitive resources as follows. Fish: Salmon (federally listed threatened species). Wildlife: Foothill Yellow-legged frog (species of special concern), Red-legged Frog (species of special concern), and Western Pond Turtle (species of special concern). Birds: Spotted Owl (federally listed threatened species), Marbled Murrelet (federally listed threatened), and Osprey (species of special concern). The riparian vegetation/habitat impacts for this project based on the preliminary scope and review is expected to be about 0.5 to 1 acres. These riparian impacts fall under the jurisdiction of the U.S. Army Corps of Engineers (USACE), North Coast Regional Water Quality Control Board (RWQCB), and CA Department of Fish and Game (CDFG). Coordination with all these agencies would be required to determine impacts and mitigation. Onsite mitigation, including design, coordination and implementation would be approximately \$100,000 to satisfy the permits requirement. The three permits &/or certification anticipated are: 1602, 404, and 401. These permits are described in section "6" above. Section 7 informal or formal consultation may be required for federally endangered species that may be located within the project area. Caltrans would consult with the USFWS regarding the impacts to endangered species, requiring approximately 1 year. See Attachment C for the timelines and work windows for endangered species. Water of the US Impacts/Wetlands: A 404 U.S. Army Corps of Engineers (USACE) 404 would be required if wetlands are impacted, requiring approximately year to obtain permit approval. Mitigation cost would be based on USACE 2008 in lieu fee schedule at 1 ac = \$150,000 for wetland impacts. These possible impacts (US Waters and riparian) fall under the jurisdiction of the U.S. Army Corps of Engineers (USACE), North Coast Regional Water Quality Control Board (RWQCB), and CA Department of Fish and Game (CDFG). Coordination with all these agencies would be required to determine impacts and mitigation cost.

- 8.16 Cumulative Impacts: The proposed project is not anticipated to have cumulative impacts.

- 8.17 Context Sensitive Solutions: Caltrans uses Context Sensitive Solutions (CSS) as its approach to plan, design, construct, maintain, and operate its transportation system. CSS uses innovative and inclusive approaches that integrate and balance community, aesthetic, historic, and environmental values with transportation safety, maintenance, and performance goals and is reached through a collaborative, interdisciplinary approach involving all stakeholders. In order to ensure that CSS is fully integrated into the project development process, imaginative, and early planning is required along with continuous community involvement. Early agency coordination for each resource area as well as early outreach to the community will help to ensure a successful CSS outcome.

9. Summary Statement for PSR or PSR-PDS

For each practicable alternative write a brief summary of key environmental issues, studies required, permits, and anticipated environmental commitments for permanent impacts. Include a time and potential constraints or special considerations, such as construction windows, biological monitoring, Native American monitoring, acquisition of Permits to Enter, etc. For a standard PSR, include cost estimates for environmental permits and commitments. This statement will go directly into the PSR or PSR-PDS.

In order to identify environmental issues, constraints, costs, and resource needs, Environmental Management prepared this Preliminary Environmental Analysis Report (PEAR) for the project. Preliminary assessment consisted of records review and databases.

Environmental Document & Permits Timelines:

Based on the environmental documentation required, 24 months would be required to complete studies and the Initial Study with the Negative Declaration (Final Environmental Document), which would achieve PA&ED. After PA&ED, an additional 1 year would be required to obtain permits and approvals from the resource agencies.

Permits & Approvals:

The following permits would be required based on the current scope.

* A U.S. Army Corps of Engineers (USACE) Section 404 permit would necessary, requiring approximately 1 year to obtain and no cost for the permit. Mitigation costs include \$150,000 per acre to mitigate impacts to wetlands. Mitigation costs include \$250,000 per acre to mitigate impacts to Waters of the US.

* A Regional Water Quality Control Board (RWQCB) Section 401 Water Quality Certification would be necessary, requiring 6 months to obtain this certification and would cost \$640 to \$5,000 for the permit. Costs are identified in the "Dredge and fill Fee Calculator".

* A CA Department of Fish and Game (CDFG) Section 1602 Streambed Alteration Agreement would be necessary, approximately 90 days would be required to obtain this permit and cost \$4,500. Mitigation is anticipated in the amount of \$100,000 to satisfy the permit requirements for disturbed vegetation. A revegetation plan would be required.

* A Section 4(f) study may be required because the project is located in Humboldt Redwoods State Park. This law requires Caltrans to determine the project's effects to publicly owned parks, recreational areas, or wildlife or waterfowl refuges officially designated as such. Work on the Park's property would require approval and coordination with the Park. Property acquisition may be required to maintenance the culverts.

10. Disclaimer

This Preliminary Environmental Analysis Report (PEAR) provides information to support programming of the proposed project. It is not an environmental determination or document. Preliminary analysis, determinations, and estimates of mitigation costs are based on the project description provided in the Project Study Report (PSR). The estimates and conclusions in the PEAR are approximate and are based on cursory analyses of probable effects. A reevaluation of the PEAR will be needed for changes in project scope or alternatives, or in environmental laws, regulations, or guidelines.

11. List of Preparers

Cultural Resources specialist Jeff Haney	Date: 10/21/09
Biologist Allison Kunz	Date: 02/2009
Community Impacts specialist PDT/Project Scope/AEP	Date: 03/2009
Noise and Vibration specialist Sharon Tang	Date: 12/08/08
Air Quality specialist Sharon Tang	Date: 12/08/08
Paleontology specialist/liaison NA	Date: N/A
Water Quality specialist Alex Arevalo	Date: 01/23/09
Hydrology and Floodplain specialist Fernando Manzanera	Date: 11/17/08
Hazardous Waste/Materials specialist Steve Werner	Date: 09/24/08
Visual/Aesthetics specialist Jim Hibbert	Date: 12/05 2008
Energy and Climate Change specialist Darla Tate & PEAR Manual	Date: 03/25/09
Other: Pre Drainage Report	Date: 11/10/08
PEAR Preparer (Name and Title) Darla Tate, AEP	Date: 03/30/09

12. Review and Approval

I confirm that environmental cost, scope, and schedule have been satisfactorily completed and that the PEAR meets all Caltrans requirements. Also, if the project is scoped as an EA or EIS, I verify that the HQ DEA Coordinator has concurred in the Class of Action.

Adelle Pomeroy for Sandra Rosas
Environmental Branch Chief

Date: 3/30/09

Richard Miller
Project Manager

Date: 4-21-09

REQUIRED ATTACHMENTS:

Attachment A: PEAR Environmental Studies Checklist

Attachment B: Estimated Resources by WBS Code

Attachment C: Schedule (Gantt Chart)

Attachment D: PEAR Environmental Commitments Cost Estimate (Standard PSR)

Attachment A: PEAR Environmental Studies Checklist

Rev. 11/08

Environmental Studies for PA&ED Checklist					
	Not anticipated	Memo to file	Report required	Risk* L M H	Comments
Land Use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	H	Section 4(f)
Growth	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Farmlands/Timberlands	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Community Impacts	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Community Character and Cohesion	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Relocations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Environmental Justice	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Utilities/Emergency Services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Visual/Aesthetics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	H	
Cultural Resources:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Archaeological Survey Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Historic Resources Evaluation Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Historic Property Survey Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Historic Resource Compliance Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Section 106 / PRC 5024 & 5024.5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Native American Coordination	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	H	
Finding of Effect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Data Recovery Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Memorandum of Agreement	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	H	
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Hydrology and Floodplain	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	H	prepared
Water Quality and Stormwater Runoff	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	L	
Geology, Soils, Seismic and Topography	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Paleontology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
PER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
PMP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Hazardous Waste/Materials:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	L	
ISA (Additional)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	H	update
PSI	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	L	
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Air Quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Noise and Vibration	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Energy and Climate Change	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	L	
Biological Environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Natural Environment Study	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Section 7:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Formal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	M	
Informal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	M	
No effect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	M	
Section 10	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
USFWS Consultation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	H	
NMFS Consultation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	L	
Species of Concern (CNPS, USFS, BLM, S, F)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M	

Environmental Studies for PA&ED Checklist					
	Not anticipated	Memo to file	Report required	Risk* L M H	Comments
Wetlands & Other Waters/Delineation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>H</u>	
404(b)(1) Alternatives Analysis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Invasive Species	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Wild & Scenic River Consistency	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Coastal Management Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
HMMP	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
DFG Consistency Determination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
2081	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Other:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Cumulative Impacts	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Context Sensitive Solutions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Section 4(f) Evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>H</u>	
Permits:					
401 Certification Coordination	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>H</u>	
404 Permit Coordination, IP, NWP, or LOP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>H</u>	
1602 Agreement Coordination	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>H</u>	
Local Coastal Development Permit Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
State Coastal Development Permit Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
NPDES Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
US Coast Guard (Section 10)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
TRPA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
BCDC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	

ATTACHMENT B - Resources by WBS Code

EA: 01-40850K

Description: Culvert Rehabilitation

Assigned Unit	Senior	Coord	Biology	Cultural	Haz Waste	Socio-Economic	Storm Water	Noise/Air	Paleo	Sup Svcs	Landscape	Total
Project Management												
100.05.05 - Project Init. & Ping												0
100.05.10 - PID Cmnt Exec. & Cmt	2	2										4
100.05.15 - PID Cmnt Closeout												0
100.10.05 - PASSED Cmnt Init. & Ping												0
100.10.10 - PASSED Cmnt Exec. & Cmt	6	6										12
100.10.15 - PASSED Cmnt Closeout												0
100.10.20 - Project Shelving (PASSED)												0
100.10.25 - Project Unshelving (PASSED)												0
100.10.30 - Upd Admiv Rec during PASSED												0
100.10.35 - Execd Coop Agre for PASSED Process												0
100.15.05 - PS&E Cmnt Init. & Ping												0
100.15.10 - PS&E Cmnt Exec. & Cmt	4	4										8
100.15.15 - PS&E Cmnt Closeout												0
100.15.20 - Project Shelving (PS&E)												0
100.15.25 - Project Unshelving (PS&E)												0
100.15.30 - Upd Admiv Rec during PS&E												0
100.15.35 - Execd Coop Agre for PS&E Process												0
100.20.05 - Const. Cmnt Init. & Ping												0
100.20.10 - Const. Cmnt Exec. & Cmt												0
100.20.15 - Const. Cmnt Closeout												0
100.20.20 - Project Shelving (Construction)												0
100.20.25 - Project Unshelving (Construction)												0
100.20.30 - Upd Admiv Rec during Const												0
100.20.35 - Execd Coop Agre for Const Process												0
100.25.05 - RAW Cmnt Init. & Ping												0
100.25.10 - RAW Cmnt Exec. & Cmt												0
100.25.15 - RAW Cmnt Closeout												0
100.25.20 - Project Shelving (Right of Way)												0
100.25.25 - Project Unshelving (Right of Way)												0
100.25.30 - Upd Admiv Rec during RAW												0
100.25.35 - Execd Coop Agre for RAW Process												0
100.25.50 - Execd Coop Agre for RAW Rmmt												0
Total Project Management	12	12	0	0	0	0	0	0	0	0	0	24

Perform Preliminary Engineering Studies and Prepare Draft Project Report

160.05.05 - Apprad PID Review	4	10										14
160.05.10 - Geotechnical Information Review												0
160.05.20 - Traffic Data & Forecasts Review												0
160.05.30 - Project Scope Review												0
160.10.20 - Valve Analysis												0
160.10.25 - Hydraulic/Hydro Study												0
160.10.30 - Hwy Planning Des Concepts												0
160.15.20 - Draft Project Report	5	5										10
160.15.25 - Draft PR Circ. Rev & App												0
160.30.05 - Maps for ESR												0
160.30.10 - Survey Maps for Env Studies												0
160.30.15 - Prop Access Rights for Env/Eng Studies										2		2
160.40 - NEPA Delegation										2		2
Total Prelim Eng Studies	9	15	0	0	0	0	0	0	0	2		26

Assigned Unit	Senior	Coord	Biology	Cultural	Haz Waste	Socio-Economic	Storm Water	Noise/Air	Paleo	Sup Svcs	Landscape	Total
Perform Environmental Studies and Prepare Draft Environmental Document												
165.Support												54
165.05.05 - Project Information Review	3	6								45		54
165.05.10 - Pub & Agency Scoping	4	5										9
165.05.15 - Ats for Further Study												0
165.10.05 - Surveys & Maps for Study			22									22
165.10.10 - Obtain Rights of Entry	2	10	27									39
165.10.15 - CIA Land Use & Growth	1	2										3
165.10.25 - Noise Study	1	1						8				10
165.10.30 - Air Quality Study								8				8
165.10.35 - Water Quality Studies	1	1					20					22
165.10.40 - Energy/Climate Change Studies	10	20								2		32
165.10.45 - Sum Geotech Report												0
165.10.50 - Preliminary Site Investigation HW					15							15
165.10.55 - Draft R/W Relocation Impact Eval												0
165.10.65 - Paleontology Study												0
165.10.70 - W74 & Spen's River Coordination	1	1										2
165.10.75 - Env'r Commitments Record	1	5								2		8
165.10.85 - VIA												200
165.15.05 - Biological Assessment			169							2		171
165.15.10 - Wetlands Study	3		189									192
165.15.15 - Resource Agency Coord			72									72
165.15.20 - NES Report			72									72
165.15.99 - Other Biological Studies												0
165.20.05 - Archaeology Survey												0
165.20.05.05 - APE Map				45								45
165.20.05.10 - NA Consultation				21								21
165.20.05.15 - Records & Literature Search				18								18
165.20.05.20 - Field Survey				120								120
165.20.05.25 - ASR				240								240
165.20.05.99 - Other Archy Survey Products												0
165.20.10 - Extended Phase I Archy Studies												0
165.20.10.05 - Native American Consultation												0
165.20.10.10 - Extended Phase I Proposal												0
165.20.10.15 - XPI Field Investigation												0
165.20.10.20 - XPI Material's Analysis												0
165.20.10.25 - Extended Phase I Report												0
165.20.10.99 - Other Phase I Archy Products												0
165.20.15 - Phase II Archy Studies												0
165.20.15.05 - NA Consultation												0
165.20.15.10 - Phase II Proposal												0
165.20.15.15 - Field Investigation												0
165.20.15.20 - Material's Analysis												0
165.20.15.25 - Phase II Report												0
165.20.15.99 - Other Phase II Archy Products												0
165.20.20 - Hist & Architectural Studies												0
165.20.20.05 - Prelim APE/Study Area Maps - Arch												0
165.20.20.10 - Hist Res Eval Rpt - Archy												0
165.20.20.15 - Hist Res Eval Rpt - Archd												0
165.20.20.20 - Bridge Evaluation												0
165.20.20.99 - Other H & A Study Products												0
165.20.25 - Cultural Res Comp Docs												0
165.20.25.05 - Final APE Maps				27								27
165.20.25.10 - PRC 6024.5 Consult												0
165.20.25.15 - HPSR/HRCR				100								100
165.20.25.20 - Finding of Effect												0
165.20.25.25 - Archy Data Recovery Plan												0
165.20.25.30 - MOA												0
165.20.25.99 - Other Cult Res Comp Products												0
165.25.05 - Draft ED Analysis	50	250										300
165.25.10 - 4(f) Evaluation	20	60										80
165.25.15 - CECE Determination												0
165.25.20 - Env Quality Control & Other Reviews	20	25	27									72
165.25.25 - Approval to Circ Resolution										2		2
Assigned Unit												
165.25.30 - Env Coordination	10	20										30
165.25.99 - Other EED Products										10		10
165.30 - NEPA Delegation	2	2								2		6

ATTACHMENT B - Resources by WBS Code												
EA: 01-40950K												
Description: Culvert Rehabilitation												
Assigned Unit	Senior	Coord	Biology	Cultural	Haz Waste	Socio-Economic	Storm Water	Noise/Air	Paleo	Sup Svcs	Landscape	Total
Total Env Studies & Prep DED	129	428	649	671	15	0	20	18	0	65		1591
Permits, Agreements, and Route Adoptions during PAXED Cmpnt												
170.05 - Required Permits (Isl)												0
170.10.05 - US Army Corps 404 Permit	2	2	16									20
170.10.10 - US Forest Service Permit(s)												0
170.10.15 - US Coast Guard Permit												0
170.10.20 - DFG 1600 Agreement(s)	2	2	16									20
170.10.25 - Coastal Zone Development Permit												0
170.10.30 - Local Agency Concurrence Permit												0
170.10.40 - Waste Discharge (NPDES) Permit(s)												0
170.10.45 - US Fish & Wildlife Service Approval	2	2	16									20
170.10.50 - RWQCB 401 Permit	2	2	16									20
170.10.60 - Updated ECR												0
170.10.95 - Other Permits												0
170.45 - MOU from TERO Office												0
170.55 - NEPA Delegation												0
Total Permits, Agreements & Route Adoptions	8	8	64	0	0	0	0	0	0	0	0	60
Circulate Draft Environmental Document and Select Preferred Project Alternative												
175.05.05 - Master Dist & Invitation Lists	3	5								5		13
175.05.10 - Notices Pub Hear & DED Avail	2	5										7
175.05.15 - DED Pub & Circulation	5	25										30
175.05.20 - Fed Consistency Dist (Coastal)	2	2										4
175.05.99 - Other DED Circulation Products			2	2	2		2	2			2	10
175.10.05 - Need for Pub Hearing Determination	2	2										4
175.10.10 - Pub Hearing Logistics	2	2										4
175.10.15 - Displays for Pub Hearing	2	2										4
175.10.20 - 2nd Notice Pub Hear & Avail												0
175.10.25 - Map Display & Hearing Plan												0
175.10.30 - Display Pub Hear Maps	2	2										4
175.10.35 - Public Hearing	2	2										4
175.10.40 - Record of Public Hearing												0
175.10.99 - Other Pub Hearing Products												0
175.15 - Responses to Pub Hear Comments	2	14										16
175.20 - Project Preferred Alternative										5		5
175.25 - NEPA Delegation												0
Total DED & Preferred Alt	24	61	2	2	2	0	2	2	0	10		105
Prepare and Approve Project Report and Final Environmental Document												
180.05.10 - Approved Project Rep	2	2	30									40
180.05.15 - Updated Stormwater Data Report	1	1					10					12
180.10.05 - Approved FED	10	40										50
180.10.05.05 - Draft FED Review	10	10	4	4	4		4	4			4	40
180.10.05.10 - Revised Draft FED	5	30										35
180.10.05.15 - Section 4(f) Evaluation	20	60	6									85
180.10.05.20 - Findings Report												0
180.10.05.25 - Statement of Overriding Consid												0
180.10.05.30 - CEQA Certification	5	10										15
180.10.05.35 - FIRMFA and Approval												0
180.10.05.40 - Section 106 Cons & MOA	1			4								5
180.10.05.45 - Section 7 Consultation	2	2	40									44
180.10.05.50 - Final Section 4(f) Statement	10	20	5									35
180.10.05.55 - Floodplain Only PAF							20					20
180.10.05.60 - Wetlands Only PAF			27									27
180.10.05.65 - Sect 404 Permit Compliance			72									72
180.10.05.70 - Mitigation Measures	2	2	72									76
180.10.10 - Public Dist & Resp to Comments	5	10										15
Assigned Unit												
180.10.15 - Final RAV Relo Impact Document												0
180.10.99 - Other FED Products		4										4
180.15.05 - ROD (NEPA)												0
180.15.10 - ROD (CEQA)												0
180.15.20 - Env Comments Record	2	8	27	2								39
180.15.99 - Other Complete ED Products										5		5
180.20 - NEPA Delegation	5	5	1	1						5		17
Total App PR & FED	80	204	269	11	4	0	34	4	0	10	4	636
Update Project Info for PS&E												
185.05.05 - Project Concept Review for PS&E	5	10	6	5	5		5	5			5	40
185.05.10 - Updated Project Info for PS&E dev												0
Total Update for PS&E	5	10	6	5	5	0	5	5	0	0	0	40
ROW & Excess Land												
195.40.25 - Property Maint & Rehab (non-rental)												0
195.40.35 - Transfer of Prop to Clear Status												0
195.45.05 - Excess Lands Inventory												0
195.45.20 - Prop Dispo Units less than \$15 K												0
195.45.25 - Prop Dispo Units \$15 K - \$500 K												0
195.45.30 - Prop Dispo Units over \$500 K												0
Total ROW & Excess Land	0	0	0	0	0	0	0	0	0	0	0	0
Utility Relocation												
200.15 - Approved Utility Relocation Plan												0
200.20 - Utility Relocation Package												0
Total Coordinate Utilities	0	0	0	0	0	0	0	0	0	0	0	0
Permits, Agreements, and Route Adoptions during PS&E Cmpnt												
205.05 - Determine Required Permits												58
205.10.05 - US Army Corps 404 Permit	2	2	54									60
205.10.10 - US Forest Service Permit(s)												0
205.10.15 - US Coast Guard Permit												0
205.10.20 - DFG 1600 Agreement	2	2	54									58
205.10.25 - Coastal Development Permit												0
205.10.30 - Local Agency Concurrence Permit												0
205.10.40 - Waste Discharge (NPDES) permit												0
205.10.45 - US Fish & Wildlife Service Approval			54									54
205.10.50 - RWQCB 401 Permit	2	2	54				5					63
205.10.60 - Updated ECR	2	2	27				2					33
205.10.95 - Other Permits												0
205.20.05 - Draft Fwy Agreement												0
205.20.10 - Draft Fwy Access Review												0
205.20.15 - Final Fwy Agree												0
205.20.20 - Executed Fwy Agreement												0
205.40.10 - New Connections & Route Adopt Std												0
205.55 - NEPA Delegation	2	10										12
Total Permits, Agreements, and Route Adoptions	10	18	243	0	0	0	9	0	0	0	0	260
Assigned Unit												
225.55.20 - Right of Way Clearance												0
Total Right of Way Interests	0	0	0	0	0	0	0	0	0	0	0	0
Prepare Draft PS&E												
230.05.45 - Noise Barrier Plans												0
230.10.05 - Hwy Planting Plans	2											2
230.10.15 - Plant List											75	0
230.35.10 - Hwy Planting Specs	2											0
230.35.35 - Water Pollution Ctrl Specs												0
230.35.40 - Erosion Control Specs												0

Description: Culvert Rehabilitation												
Assigned Unit	Senior	Coord	Biology	Cultural	Haz Waste	Socio-Economic	Storm Water	Noise/Air	Paleo	Sup Svcs	Landscape	Total
230.00 - Updated Proj Info for PS&E Package	6	10	6	5	6						6	30
230.00.05 - Updated Storm Water Data Report												0
230.00.10 - Other Reviews/Updates Proj Info			27									27
230.00 - NEPA Delegation	2	2	2	2							2	8
Total Prepare Draft PS&E	11	12	34	7	5	0	0	0	0	0	82	69
Mitigate Environmental Impacts and Clean-up Hazardous Waste												
235.05.05 - Hist Structures Mitg												0
235.05.10 - Archy & Cult Mitigation												0
235.05.15 - Biological Mitigation			72									72
235.05.20 - Env Mitigation R/W work												0
235.05.25 - Paleontology Mitigation												0
235.05.99 - Other Env Mitigation Products												0
235.10.10 - Haz Waste Sites Survey												0
235.10.15 - Detailed HW Sites Investigation												0
235.15 - HW Management Plan												0
235.20 - HW PS&E												0
235.25 - HW Clean-up												0
235.30 - Certification of Sufficiency (HW)												0
235.35 - Long Term Mitigation Monitoring											250	0
235.40 - Updated ECR			27	1								28
235.45 - NEPA Delegation												0
Total Mitigation & HW Clean-up	0	0	99	1	0	0	0	0	0	0	250	100
Permits for Subsurface Geotechnical Exploration												
240.70 - Site Ready for Subsurface Exploration												0
Total Geotechnical Permit	0	0	0	0	0	0	0	0	0	0	0	0
Circulate, Review and Prepare Final District PS&E Package												
255.05 - Circ & Rev Draft Dist PS&E	4	10	27		10						2	51
255.10.25 - Updated Technical Reports			5									5
255.15 - Env Rehabilitation	4	4										8
255.20.05 - Rev Plans for Slides Comp			27									27
255.40 - Res Envs Pending Fee "Redbook"	2	20	27									49
255.45 - NEPA Delegation							2					2
Total PS&E	10	34	86	0	10	0	2	0	0	0	2	142
Prepare Contract Documents												
270.75 - Env Cert at RTL	3	10	4	1	1			1				21
Total Prepare Contract Documents	3	10	4	1	1	0	1	1	0	0		21
Perform Construction Engineering and General Contract Administration												
270.20.50 - Technical Support			27									27
270.65 - Final Inspect & Accept Rec												0
270.70 - Update ECR	1	5	27	2	1		1	1				39
270.75 - Permit Renewal & Extension												0
270.80 - Long-Term Mitigation Contract	2	2	10									14
Total Const Engineering	3	7	64	2	1	0	1	1	0	0		79
Prepare and Administer Contract Change Orders												
285.05.05 - Need for CCO Determination							6					6
285.10.15 - Other Func Support			27									27
Total CCOs	0	0	27	0	0	0	6	0	0	0	0	33
Resolve Contract Claims												
290.35 - Provide Technical Support			27									27
290.40.35 - Provide Technical Support			27									27
Total Contract Claims	0	0	27	0	0	0	0	0	0	0	0	27
Accept Contract, Prepare Final Construction Estimate & Prepare Final Report												
295.35 - Cert of Env Compliance			36									36
295.40 - Long-Term Mitigation Contract			30									30
Total Final Construction	0	0	66	0	0	0	0	0	0	0		66
Total Project Hours	304	819	1658	600	43	0	80	23	0	87	524	3709

ATTACHMENT C

Marbled Murrelet construction window: September 16 to March 23

Northern Spotted Owl construction window: August 1 to January 30

Rainy season usually starts October 15.

Combining these dates, the construction window will extend from September 16 to October 15 or until heavy rains.

HUM 234

This email was received from Sandra Rozas on 3/26/01 for 01-469500 - MS

Construction Window to Avoid Impacts to Sensitive Species

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Marbled murrelet												
Northern Spotted Owl												
Rain												
Work Window												

- Blue = Construction Window (Can DO work!)
- Red = Can not DO work!
- Black = Combined Restrictions!
- Green = Work window!!!!

Attachment D: PEAR Environmental Commitments Cost Estimate

Standard PSR Only

(Prepare a separate form for each viable alternative described in the Project Study Report)

PART 1 PROJECT INFORMATION

rev. 11/08

District-County-Route-Post Mile 01-HUM-254-6.87/42.1	EA: 01-40950
Project Description: Culvert Rehabilitation	
Form completed by (Name/District Office): Darla Tate/District 3	
Project Manager: Richard Mullen	Phone Number: 7074415877
Date: 03/30/09	

PART 2 PERMITS AND AGREEMENTS

	Permits and Agreements (\$\$)
<input checked="" type="checkbox"/> Fish and Game 1602 Agreement	6000
<input type="checkbox"/> Coastal Development Permit	
<input type="checkbox"/> State Lands Agreement	
<input checked="" type="checkbox"/> Section 401 Water Quality Certification	5000
<input checked="" type="checkbox"/> Section 404 Permit – Nationwide (U.S. Army Corps)	0
<input type="checkbox"/> Section 404 Permit – Individual (U.S. Army Corps)	
<input type="checkbox"/> Section 10 Navigable Waters Permit (U.S. Army Corps)	
<input type="checkbox"/> Section 9 Permit (U.S. Coast Guard)	
<input type="checkbox"/> Other:	
Total (enter zeros if no cost)	11000

PART 3. ENVIRONMENTAL COMMITMENTS FOR PERMANENT IMPACTS

To complete the following information:

- Report costs in \$1,000s.
- Include all costs to complete the commitment:
 - Capital outlay and staff support. Refer to Estimated Resources by WBS Code. For example, if you estimated 80 hours for biological monitoring (WBS 235.35 Long Term Mitigation Monitoring), convert those hours to a dollar amount for this entry. For current conversion rates from PY to dollars, see the Project Manager.
 - Cost of right of way or easements.
 - If compensatory mitigation is anticipated (for wetlands, for example), insert a range for purchasing credits in a mitigation bank.
 - Long-term monitoring and reporting
 - Any follow-up maintenance
 - Use current costs; the Project Manager will add an appropriate escalation factor.
 - This is an estimating tool, so a range is not only acceptable, but advisable.

Environmental Commitments Alternative :Drainage Restoratio		
	Estimated Cost in \$1,000's	Notes
Noise abatement or mitigation		
Special landscaping		
Archaeological resources		
Biological resources		
Historical resources		
Scenic resources		
Wetland/riparian resources	150 to 200	
Res./bus. relocations		
Other:		
Total (enter zeros if no cost)	150 to 200	

ATTACHMENT I

STORM WATER DATA REPORT

Short Form - Storm Water Data Report



Dist-County-Route: 01-HUM-254

Post Mile (Kilometer Post) Limits: 6.87/42.13

Project Type: Drainage System Restoration

EA: 01-40950K

RU: 01-216

Program Identification: 20.10.201.151

Phase: ☒ PID ☐ PA/ED ☐ PS&E

Regional Water Quality Control Board(s): North Coast RWQCB

1. Is the project required to consider incorporating Treatment BMPs? ☐ Yes ☒ No
2. Does the project disturb more than 0.25 acres of soil? ☐ Yes ☒ No
3. Is the project part of a Common Plan of Development? ☐ Yes ☒ No
4. Does the project potentially create permanent water quality impacts? ☐ Yes ☒ No
5. Does the project require a notification of ADL reuse? ☐ Yes ☒ No

If the answer to any of the preceding questions is "Yes", prepare a Long Form - Storm Water Data Report.

Estimated Construction Start Date: 06/01/13 Construction Completion Date: 09/01/13

Separate Dewatering Permit (if Yes, permit number) ☐ Yes Permit #: ☒ No

This Short Form - Storm Water Data Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the data upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E.


Jeffrey Pimentel, Registered Project Engineer/Landscape Architect

5/26/09
Date

I have reviewed the storm water quality design issues and find this report to be complete, current, and accurate:

STAMP
[Required for PS&E only]


Ted Schultz, District/Regional SW Coordinator or Designee

5-27-09
Date



1. Project Description

- The California Department of Transportation (Caltrans) is proposing a Culvert Rehabilitation Project at eight locations along Route 254 in Humboldt County between post miles 6.87 and 42.13, in order to alleviate current drainage problems such as soil erosion and roadway flooding. This project will also update the culverts to comply with current storm water regulations. The work will include removing and replacing Corrugated Metal Pipe (CMP) culverts with Alternative Pipe Culverts (APC), placing new drainage inlets, placing Rock Energy Dissipaters (RED) at the outlet of culverts, filling eroded areas with rock and reconstructing roadway embankments, and constructing AC dikes. Three of the culverts will increase in diameter.
- The project will cause minimal soil disturbance incidental to accessing the culverts and the staging area. Disturbed soil is anticipated to be less than 0.1 acre. This value was determined by including the estimated excavation amount needed to replace the eight culverts and the amount needed for inlet/ outlet work.
- The closest meteorological station is "Miranda Spengler Ranch". The corresponding climate summary table and intensity –duration-frequency curves for the project were taken into consideration.
- The project will require a 401 certification. Work is in close proximity to the Eel River. The North Coast RWQCB has established a TMDL for Sediment for the Eel River HU and the South Fork Eel River HU. Both Rivers are included on the 303(d) list. The project will result in no increase in impervious area.
- Based on the minimal DSA and discussions with Ted Schultz, District/Regional SW Coordinator, a Short Form SWDR was determined appropriate for this project.
- Inlets: It was noted that the ground during and after rainfall gets covered with a thick layer of redwood needles and leaves that would cause clogging and maintenance problems if grates were used at the inlets. Various types of drainage structures are currently being utilized at these locations in an attempt to satisfy maintenance issues.
- Outlets: Some of the pipes in this project have failed outlets that require embankment reconstruction by rock fill, layered reinforced earth, or a retaining wall. The final choice is left to the designer, but in any case the culvert replacement would exit the embankment significantly above the natural ground elevation and would require a downdrain alternative pipe (AP) with a rock energy dissipater (RED) at the ground level. Such downdrain must be of the same diameter as the culvert and anchored to the slope according to Standard Plan D87C.

2. Construction Site BMPs

- Due to the minimal soil disturbance (<1 acre), required during the construction phase the contractor will have to prepare and implement a Water Pollution Control Plan (WPCP). The WPCP will include temporary construction BMP's as a means of controlling storm water runoff that may occur during construction activities in different locations.
- Based on North Region Site BMP Estimating Guide, costs for Temporary Construction BMPs were estimated at 3.25% of the total project cost.

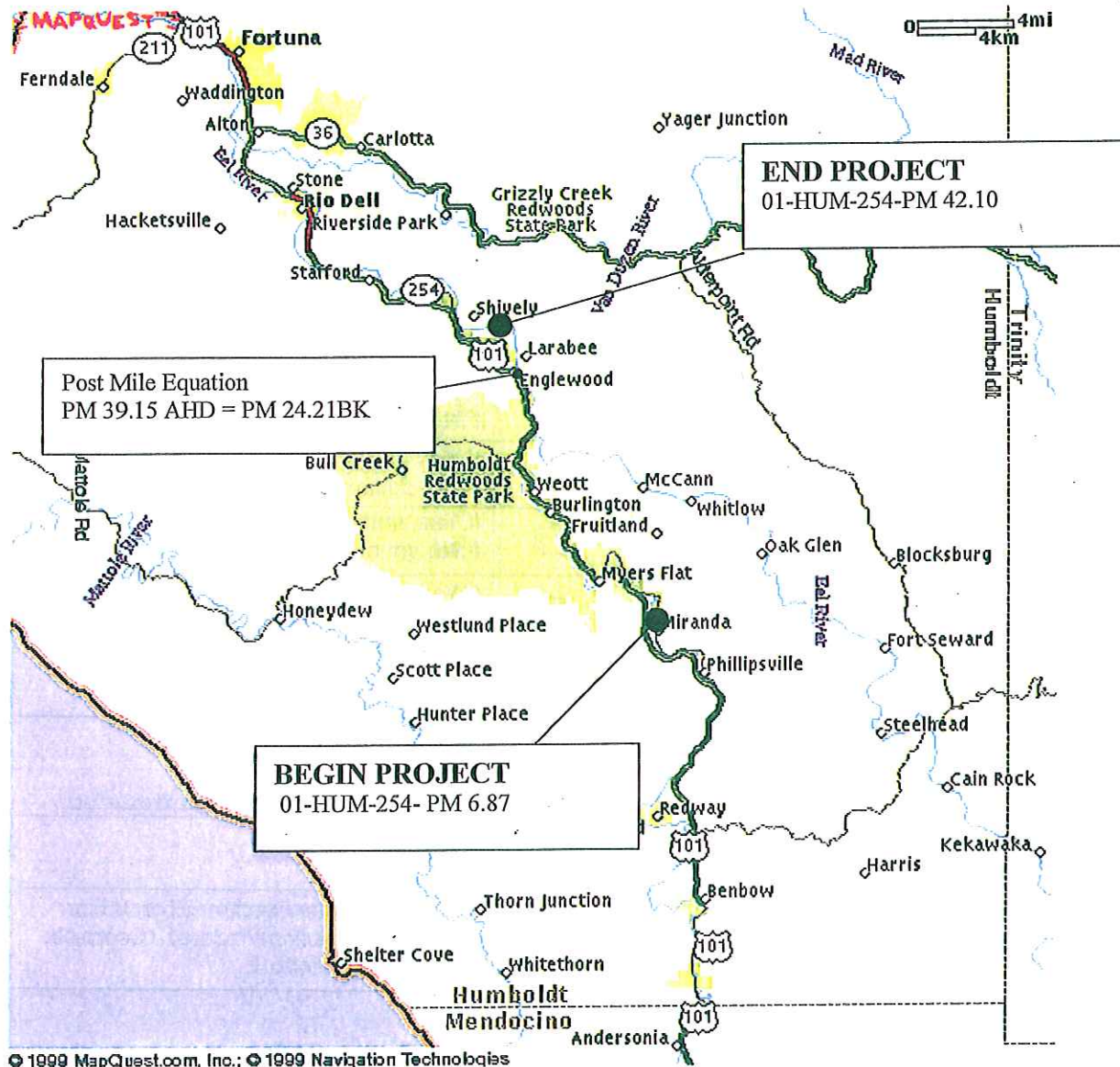
REQUIRED ATTACHEMENTS

- Vicinity Map
- Evaluation Documentation Form
- Construction Site BMP Consideration Form (required at PS&E only)
- Location and proposed work table



Short Form - Storm Water Data Report

01-Hum-254-Various Locations
Culvert Rehabilitation
EA 01-40950K



APPENDIX E

Evaluation Documentation Form

DATE: 3/27/2009

See Figure 4-1, Project Evaluation Process for Consideration of Permanent Treatment BMPs EA: 01-40950K

NO.	CRITERIA	YES	NO	SUPPLEMENTAL INFORMATION FOR EVALUATION
1.	Begin Project Evaluation regarding requirement for consideration of Treatment BMPs	<input checked="" type="checkbox"/>		Go to 2
2.	Is this an emergency project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If Yes , go to 11. If No , continue to 3.
3.	Have TMDLs or other Pollution Control Requirements been established for surface waters within the project limits? Information provided in the water quality assessment or equivalent document.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , contact the District/Regional NPDES Coordinator to discuss the Department's obligations under the TMDL (if Applicable) or Pollution Control Requirements, go to 10 or 4. <i>(Dist./Reg. SW Coordinator Initials)</i> If No , continue to 4.
4.	Is the project located within an area of a local MS4 Permittee?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If Yes , (Co.), go to 5. If No , document in SWDR go to 5.
5.	Is the project directly or indirectly discharging to surface waters?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , continue to 6. If No , go to 11.
6.	Is this a new facility or major reconstruction?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If Yes , continue to 8. If No , go to 7.
7.	Will there be a change in line/grade or hydraulic capacity?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , continue to 8. If No , go to 11.
8.	Does the project result in a <u>net increase of one acre or more of new impervious surface</u> ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If Yes , continue to 10. If No , go to 9. <i>0.0 Acres (Net Increase New Impervious Surface)</i>
9.	Is the project part of a Common Plan of Development?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If Yes , continue to 10. If No , go to 11.
10.	Project is required to consider approved Treatment BMPs.	<input type="checkbox"/>		See Sections 2.4 and either Section 5.5 or 6.5 for BMP Evaluation and Selection Process. Complete Checklist T-1 in this Appendix E.
11.	Project is not required to consider Treatment BMPs. <i>BS</i> (Dist./Reg. SW Coord. Initials) <i>JP</i> (Project Engineer Initials) <i>4-29-09</i> (Date)	<input checked="" type="checkbox"/>		Document for Project Files by completing this form, and attaching it to the SWDR.



Construction Site BMP Consideration Form

DATE: 3-3-09

Project Evaluation Process for the Consideration of Construction Site BMPs

EA: 01-40950K

NO.	CRITERIA	YES	NO	SUPPLEMENTAL INFORMATION
1.	Will construction of the project result in areas of disturbed soil as defined by the Project Planning and Design Guide (PPDG)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , Construction Site BMPs for Soil Stabilization (SS) will be required. Complete CS-1, Part 1. Continue to 2. If No , Continue to 3.
2.	Is there a potential for disturbed soil areas within the project to discharge to storm drain inlets, drainage ditches, areas outside the right of way, etc?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , Construction Site BMPs for Sediment Control (SC) will be required. Complete CS-1, Part 2. Continue to 3.
3.	Is there a potential for sediment or construction related materials and wastes to be tracked offsite and deposited on private or public paved roads by construction vehicles and equipment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If Yes , Construction Site BMPs for Tracking Control (TC) will be required. Complete CS-1, Part 3. Continue to 4.
4.	Is there a potential for wind to transport soil and dust offsite during the period of construction?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If Yes , Construction Site BMPs for Wind Erosion Control (WE) will be required. Complete CS-1, Part 4. Continue to 5.
5.	Is dewatering anticipated or will construction activities occur within or adjacent to a live channel or stream?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , Construction Site BMPs for Non-Storm Water Management (NS) will be required. Complete CS-1, Part 5. Continue to 6.
6.	Will construction include saw-cutting, grinding, drilling, concrete or mortar mixing, hydro-demolition, blasting, sandblasting, painting, paving, or other activities that produce residues?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , Construction Site BMPs for Non-Storm Water Management (NS) will be required. Complete CS-1, Part 5. Continue to 7.
7.	Are stockpiles of soil, construction related materials, and/or wastes anticipated?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If Yes , Construction Site BMPs for Waste Management and Materials Pollution Control (WM) will be required. Complete CS-1, Part 6. Continue to 8.
8.	Is there a potential for construction related materials and wastes to have direct contact with precipitation; storm water run-on, or stormwater runoff; be dispersed by wind; be dumped and/or spilled into storm drain systems?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If Yes , Construction Site BMPs for Waste Management and Materials Pollution Control (WM) will be required. Complete CS-1, Part 6. Continue to 9.
9.	End of checklist.	<input checked="" type="checkbox"/>		Document for Project Files by completing this form, and attaching it to the SWDR.

PE to initialize after concurrence with Construction (PS&E only)

Date



Table: LOCATION AND PROPOSED WORK

CULVERT	PM	EXISTING CULVERT TYPE AND SIZE	PROPOSED WORK	PERMITS REQUIRED
C1	6.87	18" CSP Length=108ft	Remove and replace existing culvert with 36" APC (108' long) at same alignment. Inlet remains similar to existing, outlet remains similar to existing.	Waters of the US: Nonreporting Nationwide 3; 1601, 401, 404
C2	15.7	24" CSP Length=44ft	Remove and replace existing rusted culvert with 24" APC (44' long) at same alignment. Inlet will be replaced with a concrete head wall w/ fill over the pipe, outlet need new embankment and down drain pipe and RED.	Water of US; Nonreporting Nationwide 3; 1601,401,404
C3	17.92	18" CMP Length=53ft	Remove and replace existing culvert with 24" APC (53' long) at same alignment. Inlet new with special fabricated grate, outlet need a new embankment and down drain pipe (100' long).	No waters
C4	19.59	18" CMP Length=52ft	Remove and replace existing culvert with 24" APC (52' long) at same alignment. Inlet new GO or GDO with specially fabricated grate, outlet remains similar to existing.	No waters
C5	21.56	24" CSP Length=42 ft	Remove and replace existing damaged culvert with 24" APC (42' long) at same alignment. Inlet remains similar to existing, outlet need a new embankment with a down drain pipe (20' long) and RED.	No waters
C6	40.32	24" CSP Length=95ft	Remove and replace existing damaged culvert with 24" APC (95' long) at same alignment. Inlet remains similar to existing concrete head wall, outlet need a new embankment with a down drain pipe (25' long) and RED.	Waters of the US: Nonreporting Nationwide 3; 1601, 401, 404
C7	42.10	18" CMP Length=40 ft	Remove and replace existing culvert with 36" APC (40' long) at same alignment. Inlet remains similar to existing, outlet need new embankment and down drain pipe (20' long).	Waters of the US: Nonreporting Nationwide 3; 1601, 401, 404
C8	42.13	24" CSPH Length= 50 ft	Remove and replace existing culvert with 36" APC (50' long) at same alignment. Inlet remains similar to existing concrete box but with a new specially fabricated grate, outlet need new embankment.	No waters

CMP= Corrugated metal pipe; APC= Alternate pipe culvert; DI= drop inlet; RED= Rock energy dissipater

ATTACHMENT J

LANDSCAPE ARCHITECTURE ASSESSMENT SHEET



NORTH REGION
LANDSCAPE ARCHITECTURE ASSESSMENT SHEET
03-LAND-0002 (Rev. 3/03)

TO: Matt Smith FROM: Jim Hibbert Unit/Senior TE Name: 03-341/Ron Flory Project Manager: Richard Mullen	CO: HUM DISTRICT: 01 DATE: 23 October 2008 EA: 01-40950K	RTE: 254	KP:	PM: 6.87/42.13
PROJECT SEPARATION: <input checked="" type="checkbox"/> Landscape as part of roadway work EA <input type="checkbox"/> Landscape under separate EA (Follow-up)		PROJECT: Drainage Improvements/ Culvert Rehab TYPE: SHOPP PROJECT MILESTONE: PID		

PROJECT DESCRIPTION: The project proposes to replace 9 culverts between Post Mile 6.87 and 42.13 along route 254. The primary purpose of this project is to alleviate current drainage problems such as soil erosion and roadway flooding by repairing the culverts.

AREA (M2) FOR HIGHWAY PLANTING: Unknown at the time AREA (M2) FOR EROSION CONTROL: Unknown at the time PLANT COUNT FOR MITIGATION PLANTING: Unknown at the time			
LANDSCAPE FREEWAY STATUS:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
MITIGATION PLANTING IS:	<input checked="" type="checkbox"/> Warranted	<input type="checkbox"/> Not Warranted	
SCENIC HIGHWAY STATUS:	<input type="checkbox"/> Officially Designated	<input type="checkbox"/> Eligible	<input checked="" type="checkbox"/> Not Designated
REVEGETATION REQUIRED? No	<input type="checkbox"/> Permit Required	<input type="checkbox"/> Offset of Visual Impact	<input checked="" type="checkbox"/> Other (Forest Service, BLM, etc.)
BIOLOGIST CONTACT:	Paul Holmes (530) 741-4084		
DATE OF CONTACT:	Left Message 23 October 2008		
REVEG. SPECIALIST CONTACT:	Clare Golec		

ADJACENCY TO BILLBOARDS:
<input type="checkbox"/> Project area is adjacent to outdoor advertising. <input checked="" type="checkbox"/> Project area is not adjacent to outdoor advertising.

WATER AND POWER AVAILABILITY: N/A

IS THERE (E) IRRIGATION THAT WILL BE IMPACTED BY THIS PROJECT: ☐ Yes ☒ No

DESIGN FOR MAINTENANCE SAFETY: N/A

CONTEXT SENSITIVITY:
<input checked="" type="checkbox"/> It is determined that the project will involve consideration of highway aesthetics and will require further evaluations pertaining to specific roadside enhancements.
<input type="checkbox"/> No foreseen issues with highway aesthetics <input type="checkbox"/> Other _____

COOPERATIVE MAINTENANCE AGREEMENTS:

Project may involve additional tasks indicated	<input type="checkbox"/> Visual Simulation	<input checked="" type="checkbox"/> Erosion Control	<input checked="" type="checkbox"/> SWPPP/NPDES
	<input checked="" type="checkbox"/> Mitigation Planting	<input checked="" type="checkbox"/> Field Visit	<input type="checkbox"/> Context Sensitive Solutions/Aesthetics
	<input type="checkbox"/> Contour Grading	<input checked="" type="checkbox"/> Cost Estimate	<input type="checkbox"/> Landscape Evaluation



NORTH REGION
LANDSCAPE ARCHITECTURE ASSESSMENT SHEET
03-LAND-0002 (Rev. 3/03)

COST INFORMATION:

- ☒ Mitigation Planting,
☒ 1 1/2-year Plant Establishment
☒ Erosion Control
☐ Slope Protection
☐ Aesthetic Treatment

\$ 50,000

\$ 6,000

\$ 10,000

\$

\$

/m²

TOTAL \$ 66,000

OTHER RELATED INFORMATION:

- ☐ Landscape Architecture Resource Estimate: Attached to this document.

ROADSIDE VEGETATION MANAGEMENT TREATMENT NEEDS:

- ☐ Extended Gore Areas
☐ Guardrails and Signs
☐ Medians
☐ Road Edge
☐ Side Slopes/Embankment Slopes

(See: <http://www.dot.ca.gov/hq/LandArch/roadside/index.htm> for potential treatment measures)

PREPARED BY:

[Signature]

DATE: 10/23/08

CONCURRED BY:

[Signature]
(Project Manager)

DATE: 10-23-08

APPROVED BY:

[Signature]

DATE: 10/23/08

(Landscape Architecture or Engineering Services Branch Chief)

ATTACHMENT K

INITIAL SITE ASSESSMENT

Memorandum

To: Matt Smith, Design Engineer

Date: September 24, 2008

File No.: 1-HUM-254 PM 6.87/42.13
01-40950K
Culvert Rehabilitation

From: Steve Werner 
North Region Office of Environmental Engineering—North

Subject: Initial Site Assessment

An Initial Site Assessment (ISA) for the above-referenced "culvert rehabilitation" project was conducted after receiving your request dated August 25, 2008. The ISA was based on the provided preliminary layouts dated between August 8 and 11, 2008, as well as other project details provided in the request.

Based on the information provided, the ISA found that the project likely has only nominal hazardous waste issues related to lead. The yellow paint or thermoplastic stripe that will be removed during pavement trenching is known to contain lead. The contractor will also excavate soil adjacent to the highway that is likely impacted with Aerially Deposited Lead (ADL). Although it is not likely that hazardous waste will be generated on this project, the fact that lead is present will necessitate that the contractor prepare a Lead Compliance Plan (LCP) that addresses the yellow paint/thermoplastic and ADL in the soil.

For the purposes of determining the appropriate environmental documents required for the project, the work site(s) should not be considered to be on the *Hazardous Waste and Substances Site List (Cortese List)*.

The development of Contract Non-Standard Special Provisions (NSSPs) is necessary for the LCP noted above. This office develops and acquires approval from the Headquarters sponsors for those NSSPs. This is done at the Engineer's request when project design is complete. The development and approval process takes a minimum of two weeks, so please allow for this time in project scheduling.

If there are any changes to the scope of the project, please send an e-mail or letter describing the changes so that they may be evaluated for possible hazardous waste issues that could affect your project. Communications may be directed to me at (707) 445-6658.

cc: 1-SWerner 2-File
E-mail copies to: Steve Werner, Darla Tate

SSW/ks

ATTACHMENT L

PRELIMINARY DRAINAGE RECOMMENDATIONS

Memorandum

To: Juan C. Trupp
Project Engineer
Advance Planning

Date: November 10, 2008
File: 01-HUM-254-PM 6.87/42.13
Culvert Rehabilitation
01-40950K

From: Fernando Manzanera, P.E.
District 1, Hydraulics

Subject: Preliminary Drainage Report

PROJECT DESCRIPTION

This culvert rehabilitation project is located in Humboldt County on Route 254. The latest scope of the project is to replace 8 culverts between post miles 6.87 and 42.13 along route-254 in order to alleviate current drainage problems such as soil erosion and roadway flooding and to update the culverts to comply with current storm water regulations.

The proposed work will include:

- Removing and replacing corrugated metal pipe (CMP) culverts with alternative pipe culverts (APC)
- Placing new concrete drainage inlets
- Placing rock energy dissipaters (RED) at the culvert outlets where necessary
- Filling of eroded areas and reconstructing roadway embankments where necessary

DRAINAGE RECOMMENDATIONS

The closest meteorological station is "Miranda Spengler Ranch". The corresponding climate summary table and the intensity-duration-frequency curves for the project are included in the attachments.

Field trips were conducted with personnel of Advance Planning, Construction, and Hydraulics (Jeff Pimentel, Matt Smith, Juan C. Trupp, Joaquin Rodriguez, and Fernando Manzanera) on 7/24/08 and 11/13/08 to review the work locations and propose repair strategies.

Inlets: It was noted that the ground during and after rainfall gets covered with a thick layer of redwood needles and leaves that would cause clogging and maintenance problems if grates were used at the inlets. That is why one of the culverts has a concrete box without a grate, another one is a narrow hole between the shoulder and the cut slope, others consist only of a projecting pipe, others have a straight headwall, and other one has a GMP with a overtopping side inlet.

At the locations where the cut slope is too close to the shoulder, leaving an open pit is not recommended due to the wheel trapping potential. In such cases, it would be advisable to build a GO or GDO inlet with a specially fabricated grate, similar to the ones in the picture included in the attachments, with a wide opening between bars. The openings are large enough to pass small debris and would not allow a car to be trapped if it strayed off the shoulder.

Bicycle proof inlets are not necessary within this project since none of the inlets would be on the shoulder.

The preferred inlet treatment would be a straight concrete headwall where there is enough space available to allow a headwall with fill over the pipe to be far enough from the edge of shoulder to avoid being an obstacle for vehicles.

Outlets: Some of the pipes in this project have failed outlets that require embankment reconstruction by rock fill, layered reinforced earth, or a retaining wall. The final choice is left to the designer, but in any case the culvert replacement would exit the embankment significantly above the natural ground elevation and would require a downdrain pipe (AP) with a rock energy dissipator (RED) at the ground level. Such downdrain must be of the same diameter as the culvert and anchored to the slope according to Standard Plan D87C.

A summary of conclusions for each culvert follow:

PM 6.87 (123.82085, 40.24206): The existing culvert is an 18" CSP with a length of 108', placed at a skew with respect to the road. The inlet is approximately 52 feet away from the edge of shoulder. Moving the inlet closer to the road would require some grading and possible permitting issues, since it is within the State Park, so it would be wise to place the new culvert on the same alignment. The last culvert inspection report in record (dated June 1980) reports that the invert was already perforated back then.

A hydrologic analysis of the tributary basin shows that the 10 year discharge (Q_{10}) is 74 cfs, and the Q_{100} is 132 cfs. These results are considered to be a high estimate due to the highly vegetated nature of the watershed with a high infiltration rate. A map showing the tributary area to this culvert and the location of the two adjacent culverts is included in the attachments, along with the results of the hydrologic calculation using the North Coast Regression Method.

Chart 2 of the HDS No.5 Publication (FHWA Hydraulic Design of Highway Culverts) is included in this report. It indicates that the pipe size required to satisfy the Caltrans Highway Design Manual requirement of passing the Q_{10} with no headwater over the soffit is 48", which would have a headwater of 5 times its diameter (i.e. 20') when passing the Q_{100} . The water does not pond at this location because it would flow to the next culvert 475 ft downstream. Due to the fact that Maintenance has no record of flooding at this location, even with the undersized 18" pipe, it is recommended to upsize the culvert only to a 36" APC. The 24" culvert (PM 6.96) that would receive any bypass water will be replaced by another project; we will recommend it to be upsized to 36" as well, and between the two of them will handle the Q_{100} from the watershed satisfactorily. The water discharged from the culvert at PM 6.87 also flows downstream to join the outlet from the next culvert downstream (PM 6.96).

PM 15.7 (123.89429, 40.30037): The existing culvert is a 24" CSP with a length of 44'. The maintenance inspection report dated July 1980 reports a history of debris problems and clogging. The inlet is approximately 7.5' from the edge of shoulder, this would probably be a good location for a concrete headwall with fill over the pipe forming a level surface for

errant vehicles.

The outlet is high over the ground, and water has eroded the embankment. Several attempts to repair it have been performed through the years, there are remnants of what appears to be a wooden retention wall, logs, etc.

Replace with a 24" APC with a downdrain and RED.

PM 17.92 (123.92401, 40.31783): The marker is missing, and this might be PM 17.78 instead. Remove and replace the existing 53' long 18" CMP and replace with 24" APC. According to the maintenance inspection dated September 1984, this pipe was installed at that time to replace a 12" CSP that was inadequate and in poor condition. The inlet at this location is one example of a car tire trap as mentioned earlier in this report. There will be a need for a long downdrain pipe (approx. 100') in a very steep slope. There is a clear path through the trees for the downdrain pipe, all construction should be possible to be performed from above, with the downdrain pipe hanging from the anchor piles as discussed previously in this report. Since the downdrain pipe will be so long and close to the river, no RED is recommended.

PM 19.59 (123.93552, 40.33957): Remove the existing 52' long 18" CMP and replace with 24" APC. The fill is shallow at the location, construction should be fast and easy. No erosion was noted at the existing outlet, RED would be at the option of the designer. There is a circular grate (GMP) at the inlet. After replacing the culvert, it is recommended to build a GO or GDO inlet with the specially fabricated grate discussed earlier

PM 21.56 (123.91979, 40.36410): The existing pipe was installed in 1990, it is a 24" CSP 42' long. The embankment at the outlet failed, replace pipe and rebuild embankment. Add 24" downdrain approximately 20' long. Provide RED at the outlet.

PM 40.32 (123.95223, 40.4065): The existing pipe is a 24" CSP 95' long with approximately 25' of downdrain. Replace pipe and downdrain with 24" APC (the existing downdrain can probably be rotated) and rebuild embankment. Provide RED at the outlet. Try to maintain the same inlet configuration of concrete headwall.

PM 42.10 (123.97789, 40.41957): Remove and replace existing 18" 40' long CMP with 36" APC. Repair the embankment, provide 20' long downdrain. Since outlet is so close to the river, no RED is necessary.

PM 42.13 (123.97805, 40.41997): Remove and replace existing 24" 50' long CSPH with 36" APC. The inlet is a concrete box with no grate, replace as suggested previously in this report. Rebuild the embankment at the outlet.

The current maintenance supervisor for the area is Carol Bryant. She can be reached at the Garberville Maintenance Station on Route 101, and can be a good source of information being very familiar with the territory.

FLOODPLAIN INFORMATION

The FEMA floodplain status of each location as is shown in the floodplain maps attached to this report is:

PM 6.87: The culvert is in Zone D (areas of undetermined, but possible, flood hazards; FEMA FIRM Map 060060 1725B, July 19, 1982).

PM 15.7: The west side of the highway (outlet side of the culvert) is on Zone A (areas of 100-year flood; base flood elevations and flood hazard factors not determined, and the road itself and the east side are on Zone D; FEMA FIRM Map 060060 1525B, July 19, 1982).

PM 17.92: The west side of the highway (outlet side of the culvert) and the road itself are on Zone A, and the east side is on Zone D (FEMA FIRM Map 060060 1525B, July 19, 1982).

PM 19.59: At this location, the highway is entirely within Zone A (FEMA FIRM Map 060060 1525B, July 19, 1982).

PM 21.56: At this location, the highway is entirely within Zone D (FEMA FIRM Map 060060 1525B, July 19, 1982).

PM 40.32 At this location, the highway is entirely within Zone C (Areas of minimal flooding, FEMA FIRM Map 060060 1340B, July 19, 1982).

PM 42.10 At this location, the highway is entirely within Zone A (FEMA FIRM Map 060060 1340B, July 19, 1982). The 100-year water surface elevation at this point is approximately 142.5 ft, as reported in the FEMA map.

PM 42.13 At this location, the highway is entirely within Zone A (FEMA FIRM Map 060060 1340B, July 19, 1982). The 100-year water surface elevation at this point is approximately 142.5 ft, as reported in the FEMA map.

No significant impacts or increases in floodwater elevations are expected due to this project. A signed and stamped Floodplain Evaluation Report Summary (FERS) is included with this letter.

If you have any questions or concerns regarding this information, please contact this office at 707-445-5322.

Original signed by FM

Fernando Manzanera, M.S., P.E.
District 1, Hydraulics

Attachments:

- Project Location Map
- Miranda Spengler Ranch Station Climate Summary
- Intensity-Duration-Curves for the project (graph and table)
- Non-Clogging Type Inlet Photographs
- PM 6.87 Culvert Watershed Map
- Regional Regression Equations Discharge Calculations
- PM 6.87 Culvert Hydraulic Capacity Calculation (HDS 5-Chart 2)
- Flood Evaluation Report Summary Form (signed and stamped)
- Project locations on the FEMA Flood Insurance Rate Maps

cc:

L. Kostrzewa

F. Manzanera

Project File

Chrono

Location Map

EA 01-40950K

Postmile Services

Send Feedback

OGIS Home

Back to Tools

Validate PMA Point

County1 County2

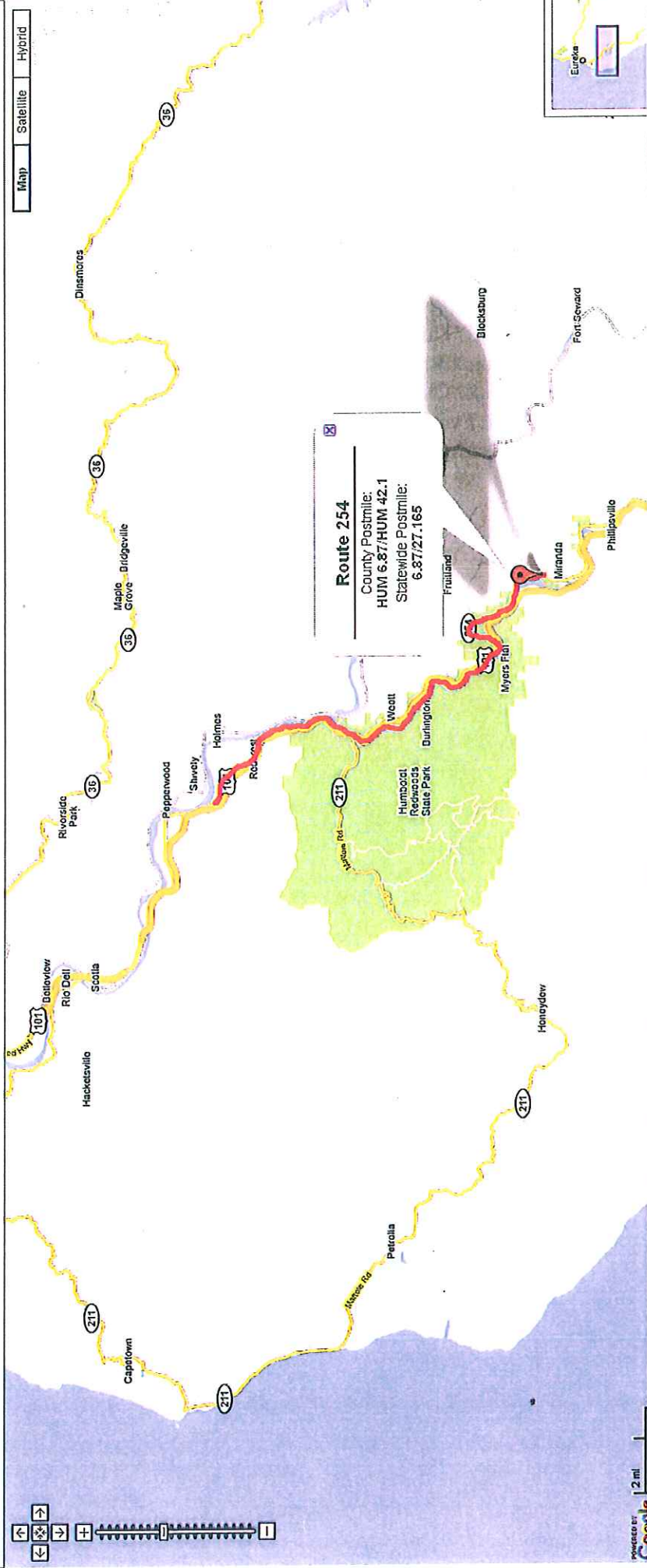
Route Postmile1 Postmile2

Go

Start Over

Convert Lat/Long to PMA

Find PMA



MIRANDA SPENGLER RANCH, CA (045713)

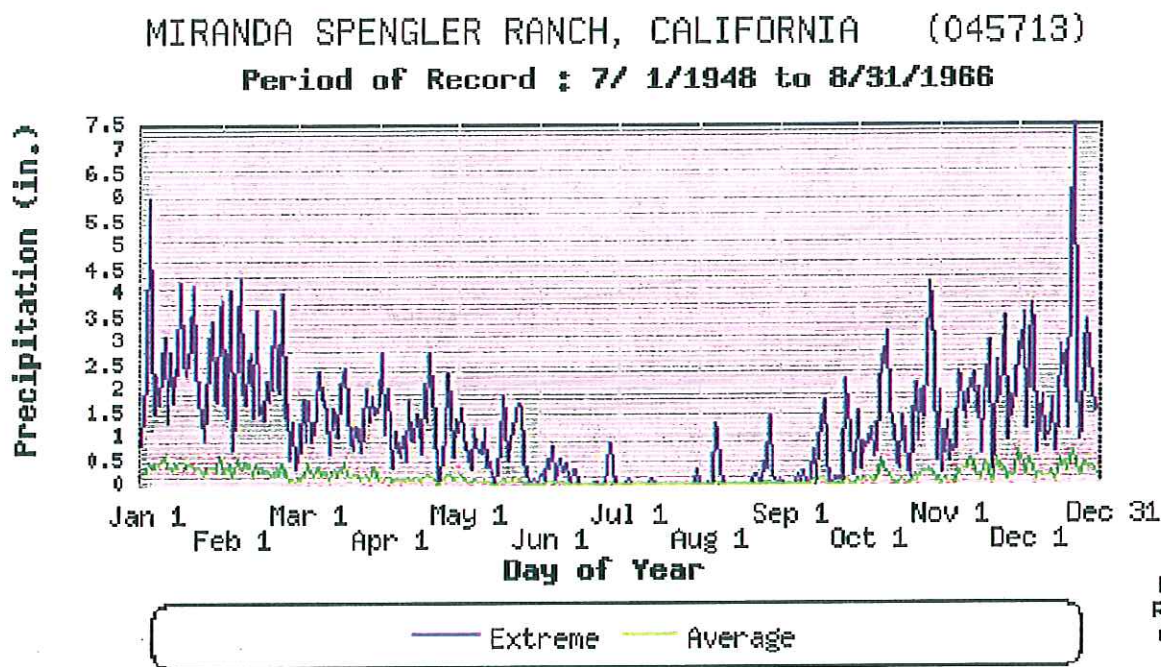
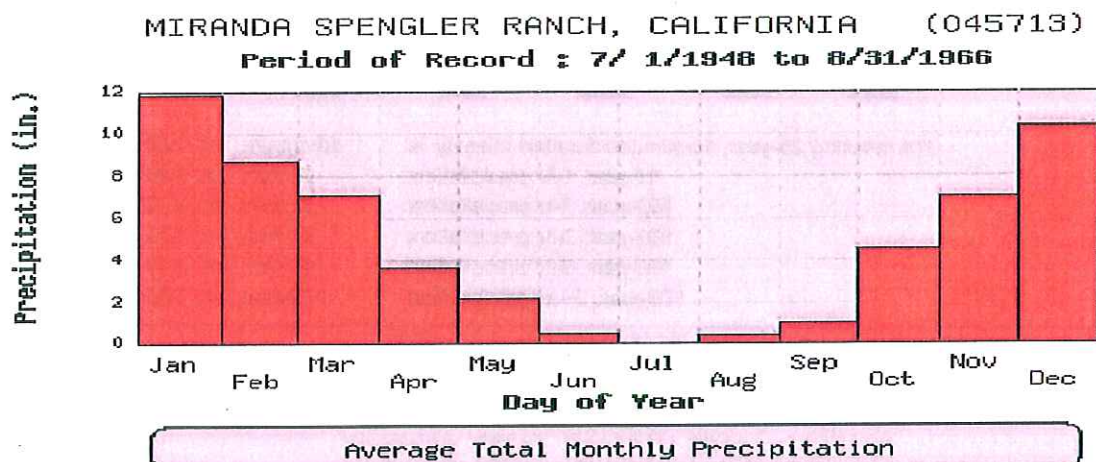
LATITUDE: 40 deg 12 min; LONGITUDE: 123 deg 46 min; ELEVATION: 370 ft

Period of Record Monthly Climate Summary

Period of Record : 7/ 1/1948 to 8/31/1966

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Average Temperature (F)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Average Min. Temperature (F)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Average Total Precipitation (in.)	11.87	8.63	7.04	3.65	2.10	0.45	0.04	0.34	0.89	4.67	7.01	10.36	57.07

Western Regional Climate Center, wrcc@dri.edu



Intensity-Duration-Frequency Curves from the Caltrans IDF-32 Program

The equation used is: $Int = RP * Dur^E$,
where RP and E are parameters provided by IDF32.

Calculated by: Fernando Manzanera

Date: 11/15/2008

Project site information:

Description: MEN-254 PM 17.92

EA 01-40950K

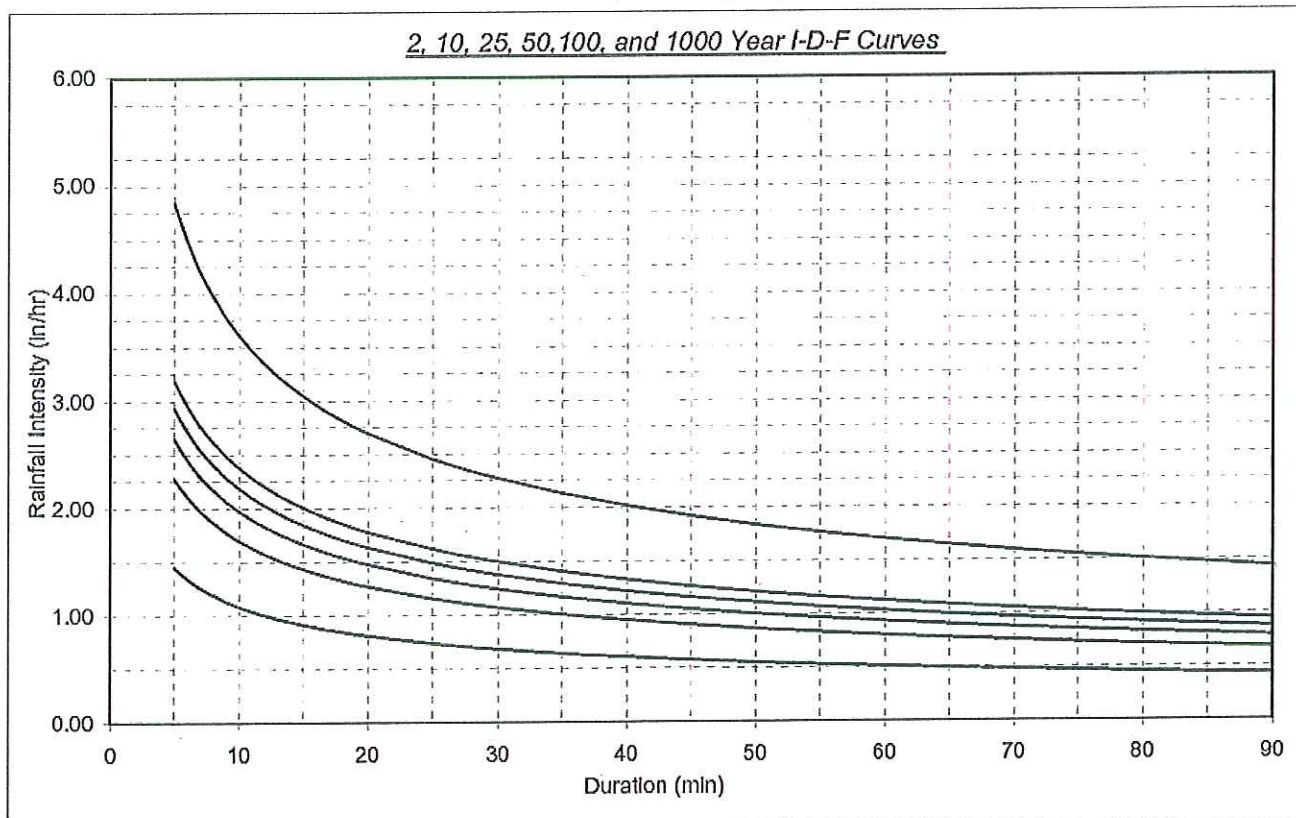
Latitude: 40.3187 deg. or: 40 deg, 19 min, 7.2 sec Coordinates location & notes:
Longitude: 123.9256 deg. or: 123 deg, 55 min, 32.1 sec NAD27 is the datum used in the IDF32 database.
Elevation: 150 ft Datum: NAD27 PM 17.92 is approximately the center of the highway segment in the project.

Rainfall gaging stations used in the interpolation (up to 3):

Station name:	<u>Miranda 4 SE</u>	<u>Miranda Spengler</u>
Station Index:	<u>444</u>	<u>445</u>
Elevation:	<u>263 ft</u>	<u>400 ft</u>
Latitude:	<u>40.183 deg</u>	<u>40.200 deg</u>
Longitude:	<u>123.783 deg</u>	<u>123.767 deg</u>
Station ID:	<u>F605711 00</u>	<u>F605713 00</u>
Years of Operation:	<u>1965-1999</u>	<u>1940-1985</u>
Approx. distance to the project site:	20.0 km = 12.4 miles	19.7 km = 12.3 miles

Interpolated Parameters:	RP(2):	RP(10):	RP(25):	RP(50):	RP(100):	RP(1000):	Slope (E):
	<u>0.51</u>	<u>0.80</u>	<u>0.93</u>	<u>1.03</u>	<u>1.12</u>	<u>1.70</u>	<u>-0.421</u>

The resulting 25-year, 10-minutes duration intensity is: 50 mm/hr, or: 1.98 in/hr
 10-year, 1-hr precipitation: 20 mm, or: 0.80 in
 100-year, 1-hr precipitation: 28 mm, or: 1.12 in
 100-year, 3-hr precipitation: 54 mm, or: 2.12 in
 100-year, 6-hr precipitation: 80 mm, or: 3.16 in
 100-year, 24-hr precipitation: 179 mm, or: 7.05 in



Notes:

- IDF32 is a public-domain program developed by Jim Varney (Caltrans), based on rainfall data supplied by the California Department of Water Resources (DWR).
- Underlined values are input data. The datum and elevation values are for reference only, they do not enter the equation or interpolation calculations.
- Spreadsheet developed by Fernando Manzanera (Caltrans District 1 Hydraulics, 10/13/05).

Intensity-Duration-Frequency Table (IDF-32 Program)

MEN-254 PM 17.92

EA 01-40950K

Latitude: 40.319 deg

Longitude: 123.926 deg

Elevation: 150

Datum: NAD27

Duration (min)	2-yr Intensity		10-yr Intensity		25-yr Intensity		50-yr Intensity		100-yr Intensity		1000-yr Intensity	
	(mm/hr)	(in/hr)	(mm/hr)	(in/hr)	(mm/hr)	(in/hr)	(mm/hr)	(in/hr)	(mm/hr)	(in/hr)	(mm/hr)	(in/hr)
5	37	1.45	58	2.28	67	2.65	74	2.93	81	3.19	123	4.84
6	34	1.34	54	2.11	62	2.45	69	2.72	75	2.95	114	4.48
7	32	1.26	50	1.98	58	2.30	65	2.54	70	2.77	107	4.20
8	30	1.19	47	1.87	55	2.17	61	2.41	66	2.62	101	3.97
9	29	1.13	45	1.78	53	2.07	58	2.29	63	2.49	96	3.78
10	28	1.08	43	1.70	50	1.98	56	2.19	60	2.38	92	3.61
11	26	1.04	42	1.63	48	1.90	53	2.10	58	2.29	88	3.47
12	26	1.00	40	1.58	47	1.83	52	2.03	56	2.21	85	3.35
13	25	0.97	39	1.52	45	1.77	50	1.96	54	2.13	82	3.24
14	24	0.94	37	1.48	44	1.72	48	1.90	52	2.07	80	3.14
15	23	0.91	36	1.43	42	1.67	47	1.85	51	2.01	77	3.05
16	23	0.89	35	1.40	41	1.62	46	1.80	50	1.95	75	2.97
17	22	0.87	35	1.36	40	1.58	44	1.75	48	1.90	73	2.89
18	22	0.85	34	1.33	39	1.54	43	1.71	47	1.86	72	2.82
19	21	0.83	33	1.30	38	1.51	42	1.67	46	1.82	70	2.76
20	21	0.81	32	1.27	38	1.48	42	1.64	45	1.78	69	2.70
25	19	0.74	29	1.16	34	1.34	38	1.49	41	1.62	62	2.46
26	18	0.73	29	1.14	34	1.32	37	1.46	40	1.59	61	2.42
27	18	0.71	28	1.12	33	1.30	37	1.44	40	1.57	60	2.38
28	18	0.70	28	1.10	33	1.28	36	1.42	39	1.54	60	2.34
29	18	0.69	28	1.09	32	1.26	36	1.40	39	1.52	59	2.31
30	17	0.68	27	1.07	32	1.25	35	1.38	38	1.50	58	2.28
35	16	0.64	25	1.00	30	1.17	33	1.29	36	1.41	54	2.13
40	15	0.60	24	0.95	28	1.10	31	1.22	34	1.33	51	2.02
45	15	0.58	23	0.90	27	1.05	30	1.16	32	1.26	49	1.92
50	14	0.55	22	0.86	26	1.00	28	1.11	31	1.21	47	1.84
55	13	0.53	21	0.83	25	0.96	27	1.07	30	1.16	45	1.76
60	13	0.51	20	0.80	24	0.93	26	1.03	28	1.12	43	1.70
65	13	0.49	20	0.77	23	0.90	25	1.00	28	1.08	42	1.64
70	12	0.48	19	0.75	22	0.87	25	0.97	27	1.05	40	1.59
75	12	0.46	18	0.73	22	0.85	24	0.94	26	1.02	39	1.55
80	11	0.45	18	0.71	21	0.82	23	0.91	25	0.99	38	1.51
85	11	0.44	18	0.69	20	0.80	23	0.89	25	0.97	37	1.47
90	11	0.43	17	0.67	20	0.78	22	0.87	24	0.94	36	1.43
180	8	0.32	13	0.50	15	0.59	16	0.65	18	0.71	27	1.07
360	6	0.24	10	0.38	11	0.44	12	0.48	13	0.53	20	0.80
1440	3	0.13	5	0.21	6	0.24	7	0.27	7	0.29	11	0.45

Notes:

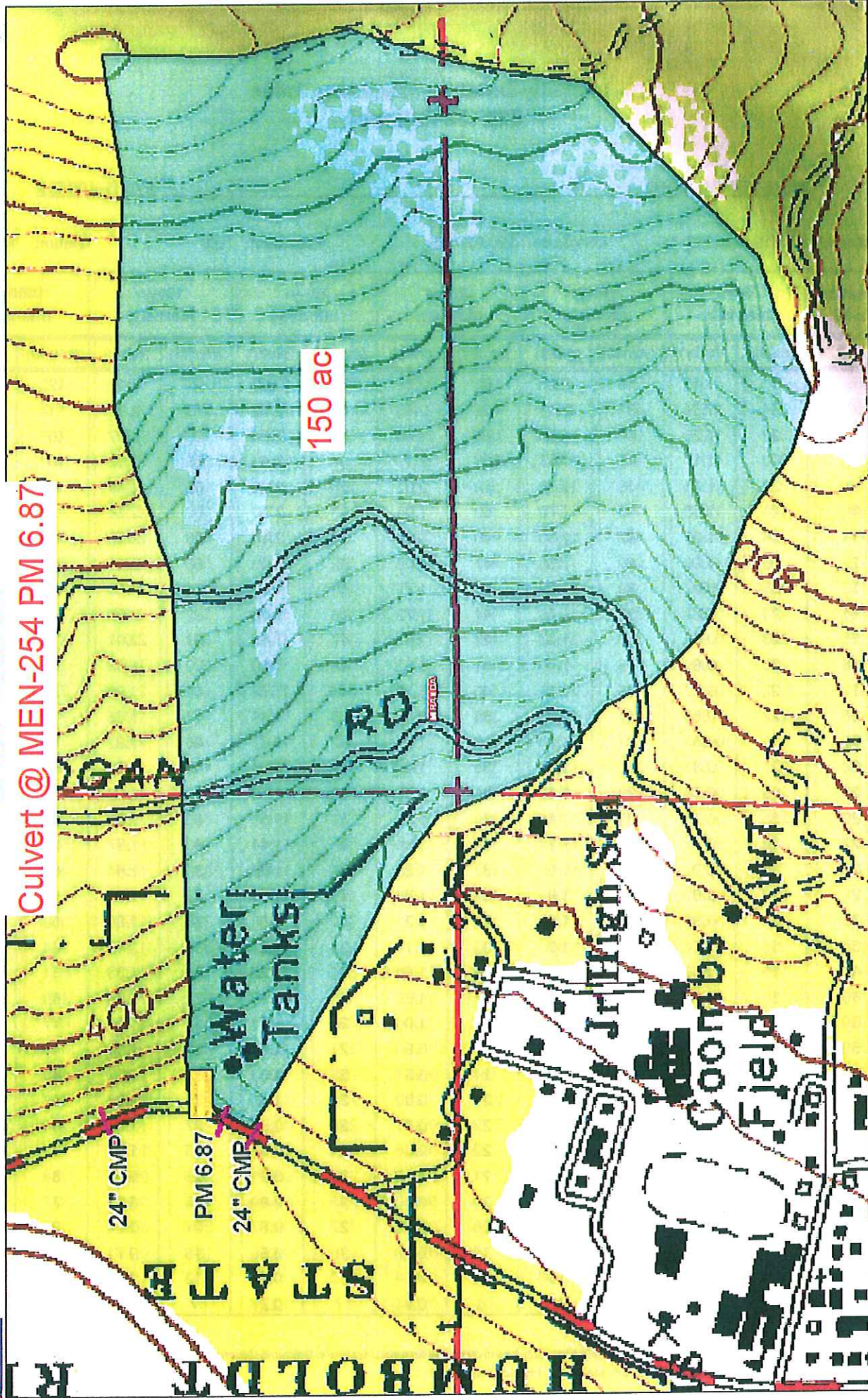
- IDF32 is a public-domain program developed by Jim Varney (Caltrans), based on rainfall data supplied by the California Department of Water Resources (DWR).
- Spreadsheet developed by Fernando Manzanera (Caltrans District 1 Hydraulics, 10/14/05).



8Map® 4.5

EA 01-40950K

Culvert @ MEN-254 PM 6.87

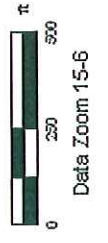


Data use subject to license.

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www.delorme.com

North Arrow
MN (15.3° E)



Regional Method (Flood Frequency)

Calculated by: **F. Manzanera**

Date: **October 2008**

Project Location and Description: **EA 01-40950K Hum-101 Culvert Rehabilitation**

North-Coast Region (Caltrans HDM Fig 819.2C, 9-1-2006)

$$Q_2 = 3.52 * A^{0.90} * P^{0.89} * H'^{-0.47}$$

$$Q_5 = 5.04 * A^{0.89} * P^{0.91} * H'^{-0.35}$$

$$Q_{10} = 6.21 * A^{0.88} * P^{0.93} * H'^{-0.27}$$

$$Q_{25} = 7.64 * A^{0.87} * P^{0.94} * H'^{-0.17}$$

$$Q_{50} = 8.57 * A^{0.87} * P^{0.96} * H'^{-0.08}$$

$$Q_{100} = 9.23 * A^{0.87} * P^{0.97}$$

Altitude Index H' : $H' = (H_{10\%} + H_{85\%}) / 2000$

where: $H_{10\%}$ = Elevation (ft) at 10% of Basin U/S Length

$H_{85\%}$ = Elevation (ft) at 85% of Basin U/S Length

Range for Altitude Index (H') value: (1 - 5.7)

Mean Annual Precip. (p) value range: (19-104 in)

Drainage Area (A) value range: (0.2-3,000 sq.mi)

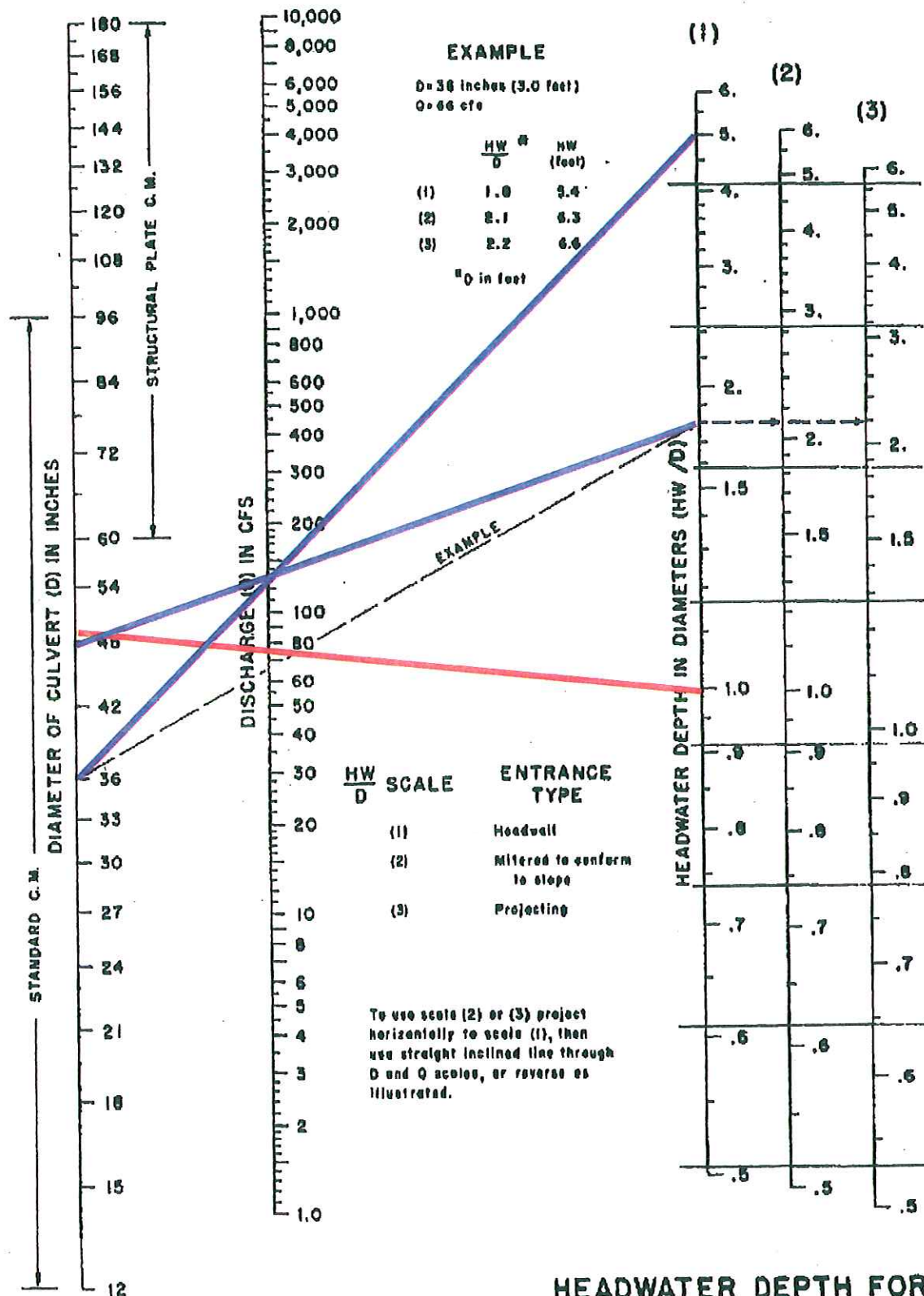
Watershed ID	Area (ac, mi ² & ha)	$H_{10\%}$ (ft & m)	$H_{85\%}$ (ft & m)	Mean Annual Precip. (in/yr & mm/yr)	H'	Q_2 (cfs & m ³ /s)	Q_5 (cfs & m ³ /s)	Q_{10} (cfs & m ³ /s)	Q_{25} (cfs & m ³ /s)	Q_{50} (cfs & m ³ /s)	Q_{100} (cfs & m ³ /s)
PM 6.87	150.0	320	1240	57.00	1.00	35	55	74	97	118	132
	0.234										
	60.7	98	378	1448		0.99	1.55	2.11	2.74	3.33	3.73

EA 01-40950K

Culvert at PM 6.87

 $Q_{10} = 74$ cfs, $Q_{100} = 132$ cfs

CHART 2





Floodplain Evaluation Report Summary

Dist Caltrans D1 Co. Humboldt Rte. 254 PM 6.87/42.13
Project No. EA 01-40950K Bridge No. N/A

Limits & Description: This culvert rehabilitation project is located in Humboldt County on Route 254. The latest scope of the project is to replace 8 culverts between post miles 6.87 and 42.13 along route-254 in order to alleviate current drainage problems such as soil erosion and roadway flooding and to update the culverts to comply with current storm water regulations. The proposed work will include: removing and replacing CMP culverts with APC, placing new concrete drainage inlets, placing rock energy dissipaters (RED) at the outlets where necessary, filling of eroded areas and reconstructing roadway embankments where necessary.

Floodplain Description: The culvert locations are in Zones A, C, and D as shown in the attached maps. No significant impacts or increases in floodwater elevations are expected due to this project.


1. Is the proposed action a longitudinal encroachment of the base floodplain? _____
2. Are the risks associated with the implementation of the proposed action significant as defined in 23 CFR, Section 650.105 (o)? _____
3. Does the proposed action constitute a significant floodplain encroachment as defined in 23 CFR, Section 650.105(q:1,2)? _____
4. Are Floodplain Studies that document the above answers on file? If no, explain: x

Yes _____ No x

_____ x

_____ x

_____ x


Signature - District Hydraulic Engineer



11/17/2008
Date

1. Will the proposed action support probable incompatible floodplain development? _____
2. Are there any significant impacts on natural and beneficial floodplain values? _____
3. Routine construction procedures are required to minimize impacts on the floodplain. Are there any special mitigation measures necessary to minimize impacts or restore and preserve natural and beneficial floodplain values? If yes, explain. _____
4. Does the proposed action constitute a significant floodplain encroachment as defined in 23 CFR, Section 650.105(q:3)? _____
6. Are Location Hydraulics Studies that document the above answers on file? If no, explain _____

Signature - Environmental Branch Chief

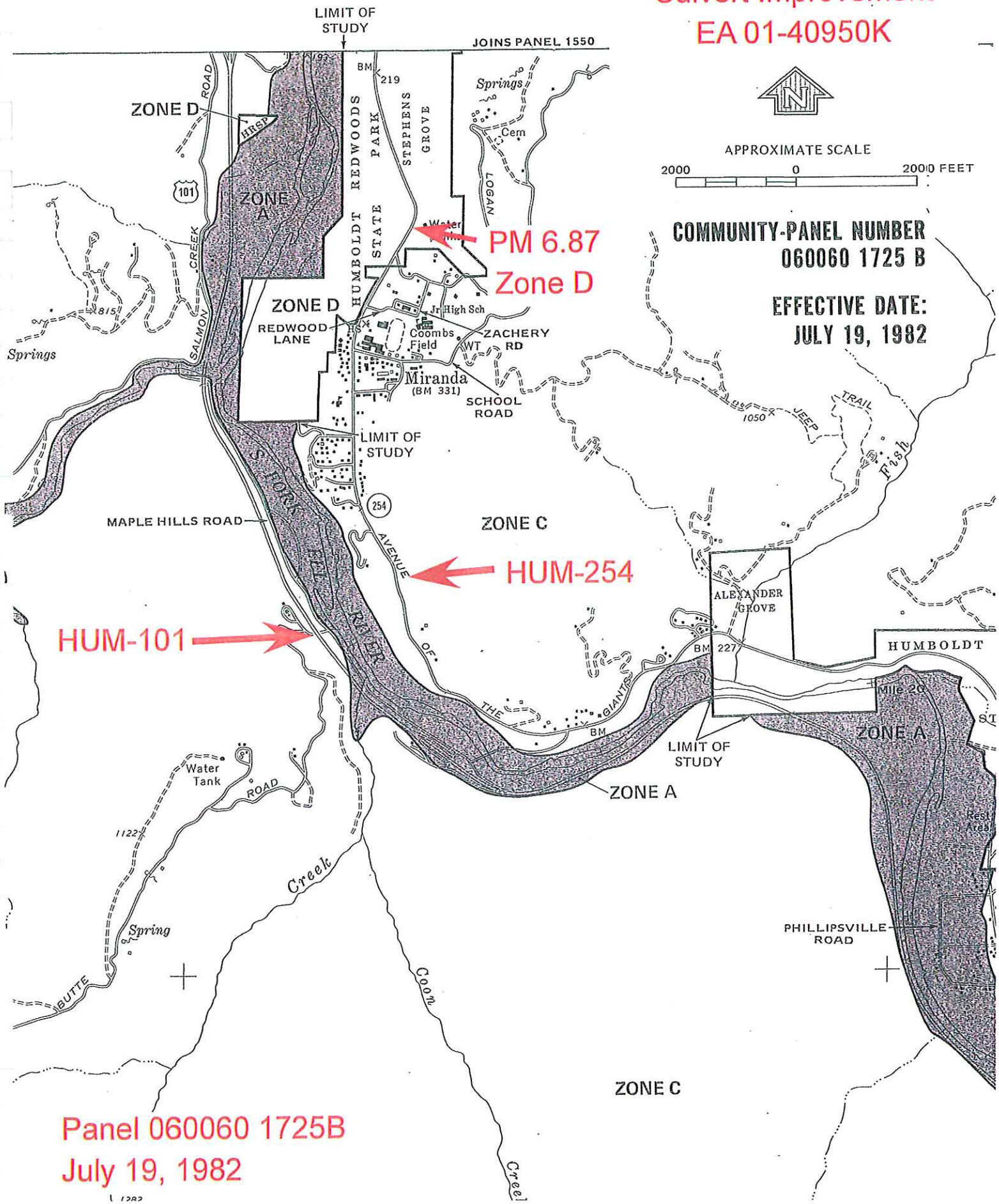
Date

Concurrence:

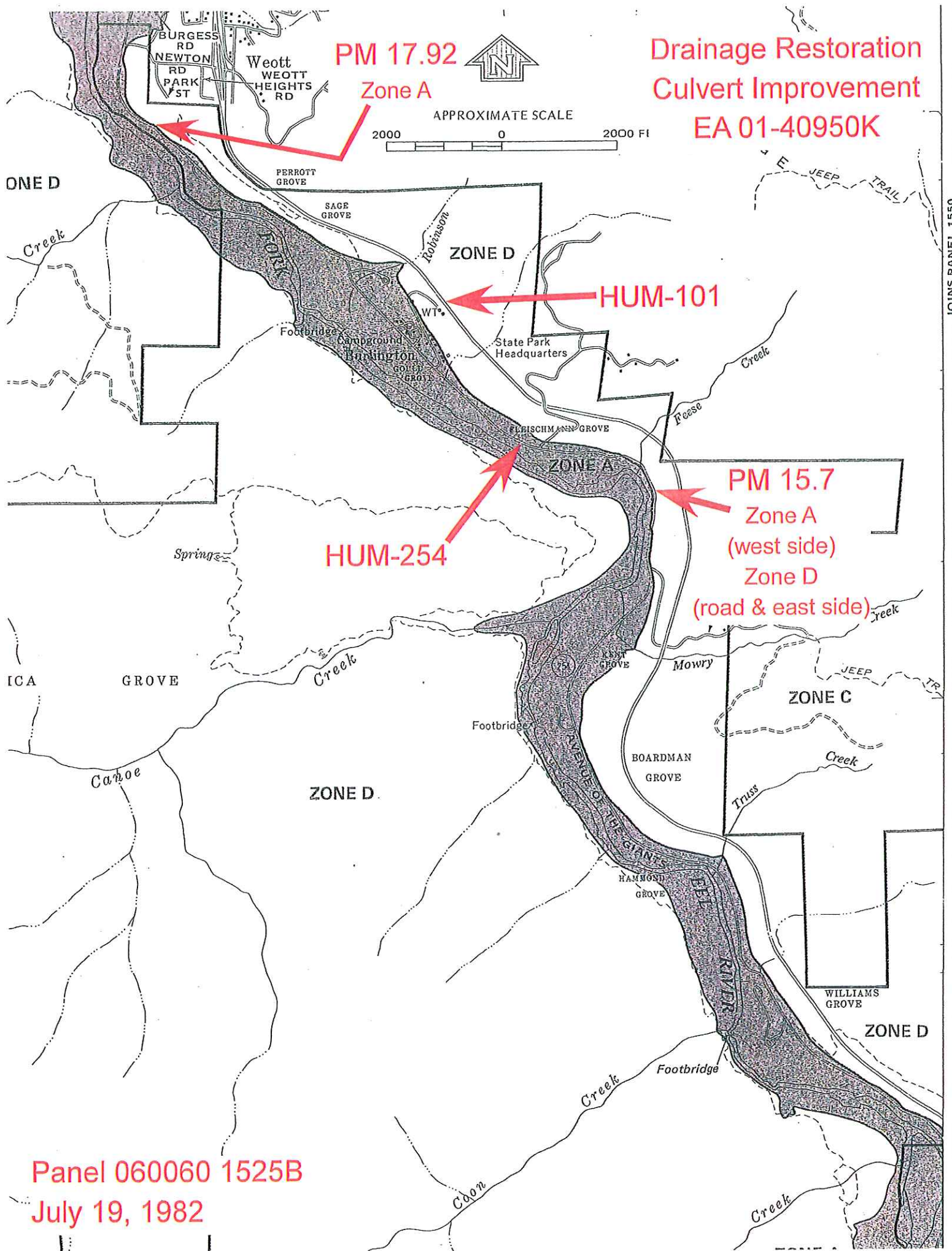
Signature - Project Engineer

Date

Drainage Restoration
Culvert Improvement
EA 01-40950K



Panel 060060 1725B
July 19, 1982



PM 17.92

Zone A

Drainage Restoration
Culvert Improvement
EA 01-40950K

APPROXIMATE SCALE

2000 0 2000 Ft

ZONE D

HUM-101

HUM-254

PM 15.7

Zone A

(west side)

Zone D

(road & east side)

ZONE D

ZONE C

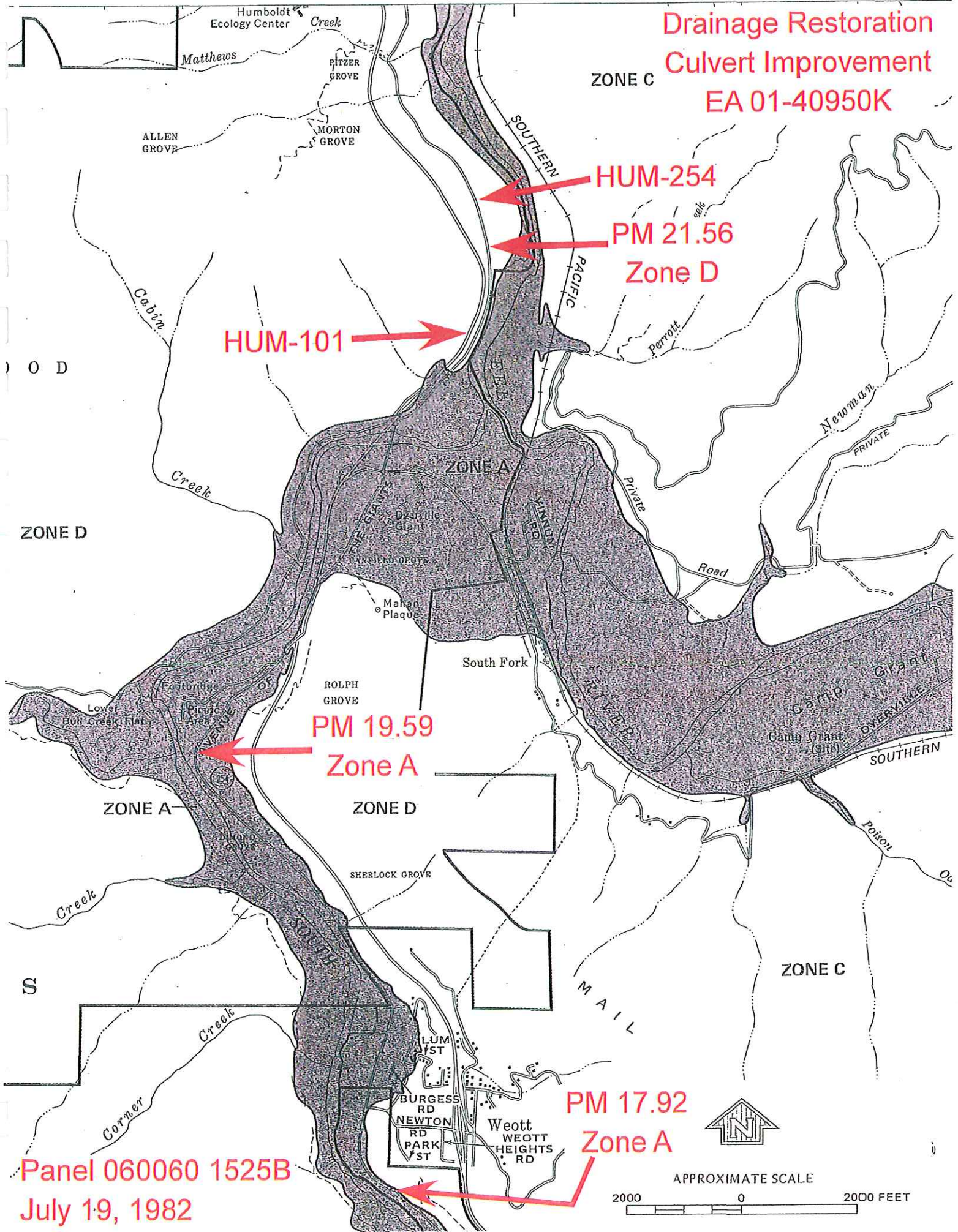
ZONE D

Panel 060060 1525B

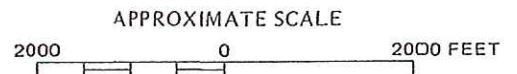
July 19, 1982

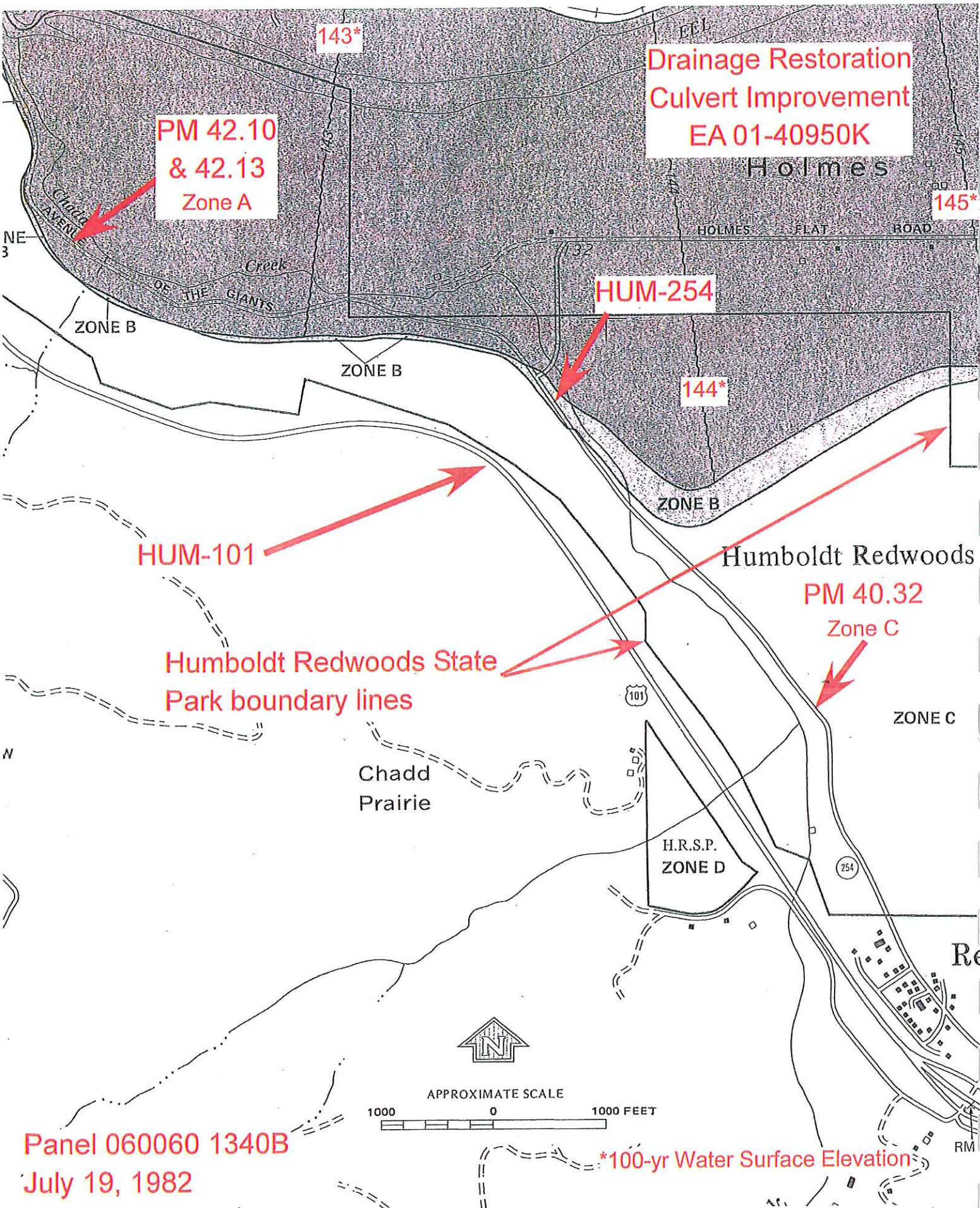
JOINS PANEL 1550

**Drainage Restoration
Culvert Improvement
EA 01-40950K**



**Panel 060060 1525B
July 19, 1982**





Panel 060060 1340B
July 19, 1982

Drainage Restoration
Culvert Improvement
EA 01-40950K

PM 42.10
& 42.13
Zone A

HUM-254

HUM-101

Humboldt Redwoods State
Park boundary lines

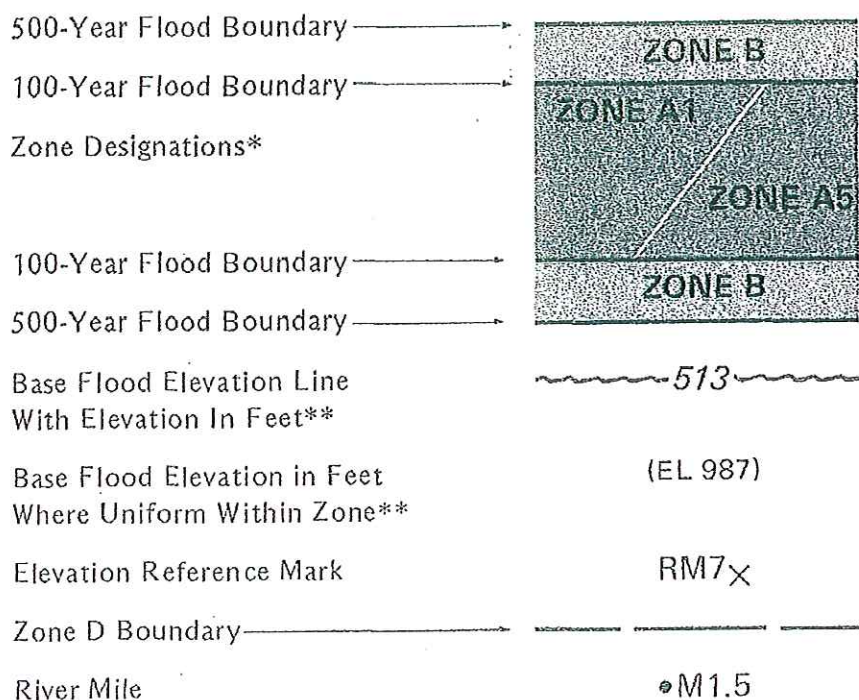
Humboldt Redwoods
PM 40.32
Zone C

APPROXIMATE SCALE

1000 0 1000 FEET

*100-yr Water Surface Elevation

KEY TO MAP



**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

ATTACHMENT M

PRELIMINARY MATERIALS RECOMMENDATION

Memorandum

To: Ilene Poindexter
Division Chief,
Advance Planning

Date: October 15, 2008

Attn: Matt Smith

File: 01-HUM-254-PM 6.87/42.13
01-40950K
Culvert Rehabilitation

From: DEPARTMENT OF TRANSPORTATION - North Region
Wesley D. Johnson - North Region, Eureka Materials

Subject: Preliminary Materials Recommendation

In response to a request for a Materials Recommendation from Matt Smith of your office, dated August 25, 2008, the project history files in the Eureka Materials Lab were reviewed for a determination of R-value (resistance to deformation) from previous work adjacent to and within the limits of the project area. Additionally, the files were reviewed for previous recommendations for pipe culverts. Due to the response time requested, no soil sampling was conducted. A review of several projects in the near vicinity revealed R-values ranging from of 12 to 64. For the purposes of this report, an assumed R-value of 15 and a Traffic Index of 7.0 (20 year design life) which was provided by the Office of Traffic Forecasting and Modeling was used for calculation of the structural section. Additionally, Subgrade Enhancement Geotextile (SEG) has been specified to improve the basement soil bearing capacity. Several previous culvert recommendations were also located within the limits of this project and are the basis of the Alternative Pipe Culvert recommendation. An updated Materials Recommendation should be requested when this project begins the design phase.

This project originally listed 9 culvert locations for repair; however, one culvert location (post mile 40.06) was dropped at your request since it was being included in another project (EA 01-



Wesley D. Johnson

475201). The locations of work are listed below:

<u>Location</u>	<u>Post Mile</u>
1	6.87
2	15.70
3	17.82
4	19.59
5	21.56
6	40.32
7	42.10
8	42.13

Additionally, your request for a materials recommendation also requested slope stability recommendations at specific locations. By policy cited in the **Highway Design Manual, section 304.1(c) Structural Integrity**; "Slopes steeper than 2:1 require approval of District Maintenance." "The Geotechnical Design Report will recommend a minimum slope required to prevent slope failure..." Since the slope recommendation falls under the responsibility of the Geotechnical Branch, no slope recommendations are given with this report.

Existing Structural Section

A review of the Materials Laboratory's Structural Section History Files and the "as-built" project files indicate the existing structural section consists of various combinations of AC overlays and construction projects through the length of this project's limits. The upper layer at Post Mile 6.87 consists of a 0.08 feet OGAC overlay, placed in 1999 under EA 01-377204. Throughout the rest of this project's locations, the surface course consists of seal coats and chip seals placed on top of dense graded AC of varying age and thickness. Additionally, a field review indicated numerous surface patches placed by maintenance projects. If existing structural section thicknesses at specific locations are required, please request coring services from this office.

Post Mile 6.87 and 15.70

A field review of this project revealed longitudinal, arcuate surface cracking in the south bound lanes at these two locations. This type of surface cracking is most likely due to structural failure from loss of bearing capacity of the basement soils as a result of slope failure or slip-out. It was noted during the field visit that surface water runoff at these locations is allowed to drain over the side slope with no containment or dikes. Upon a final decision by the Geotechnical branch regarding the method of slope improvement at these locations, surface water should be properly managed with a combination of dikes and overside drains to prevent intrusion into

the structural section and subsequent loss of bearing strength and/or further slope failure.

New Structural Sections

Mainline & Shoulders, all locations (with SEG) (20 year design life)

Based on an R-value of 20 using Subgrade Enhancement Geotextile, and a 20 year traffic index of 7.0, the following structural section strategies are recommended for mainline traffic and shoulders. Each strategy is structurally equivalent.

Strategy	HMA (Type A)	AB (Class 2)	AS (Class 2)
1	0.35'	0.55'	0.50'
2	0.35'	0.95'	----
3	0.80'	----	----

Notes:

- Local or imported borrow used to construct embankment, must meet a minimum R-value of 25 when placed within 4 feet of finished grade.
- For structural sections designed to last 20 years, the strategy to use full depth HMA (Type A) should be considered for special situations only. This would include, but not be limited to, narrow widening, shallow utilities coverage, or reducing traffic control periods due to less overall construction time.
- When a widened shoulder or new structural section is constructed to adjoin an existing structural section, geosynthetic pavement interlayer (GPI) should be placed so that it will overlap the new/existing joint by 2 feet on each side. Placement of the GPI should be as low in the HMA as possible and on the same plane for both the existing structural section and the new structural section. This will help prevent reflective cracking from the underlying joint. Please see Attachment "A" for detail.

Material Specifications

- Hot Mix Asphalt (HMA): Shall be Type A (HMA-A), conforming to Section 39 of the Standard Specifications. See Attachment "B" for a recommendation of grading size versus lift thickness.
- Asphalt Binder: Shall be PG 64-16 for HMA-A. The estimated percentage of asphalt to be added per dry weight of aggregate is 5.5% for 3/4 inch HMA-A and 6.0% for 1/2 inch HMA-A.
- Paint Binder (Tack Coat): Shall conform to revised Section 39 of

the Standard Specifications.

- Asphalt Concrete Dike: Hot Mix Asphalt used in the construction of dikes shall be Type A, 3/8 inch, conforming to Section 39 of the Standard Specifications. Asphalt binder used in construction of dikes shall conform to the standard special provisions for PG 70-10. Please see Attachment "C" for construction details for modified dike installation when open graded friction course is placed.
- Aggregate Base (AB): Shall be Class 2, conforming to Section 26 of the Standard Specifications.
- Aggregate Subbase (AS): Shall be Class 2, conforming to Section 25 of the Standard Specifications.
- Shoulder Backing: Shall conform to the requirements within the Standard Special Provisions for shoulder backing, with the following change: The minimum loose unit weight per California Test Method 212a, (Compacted Method (by rodding)) shall be 105 lbs/ft³.
- Subgrade Enhancement Geotextile (SEG): Shall be woven and have a minimum grab tensile strength of 315 lbs. Please see Attachment "D" for a table of required geotextile parameters at this location.

Alternative Pipe Culverts

A review of the Materials Lab project history files revealed information from the original installation of the culvert at Post Mile 19.59. The service life of the remaining culverts within this project was estimated from data obtained from culverts in the near vicinity of the project locations. No soil or water testing was conducted for this recommendation. Alternative pipe culverts estimated for a 50 year service life are shown in Attachment "E".

See Attachment "F" or "G" for culvert installation details.

If you have any questions, please call Dave Waterman at (707)445-6355 or Wes Johnson at (707)445-6386.

Attachments.

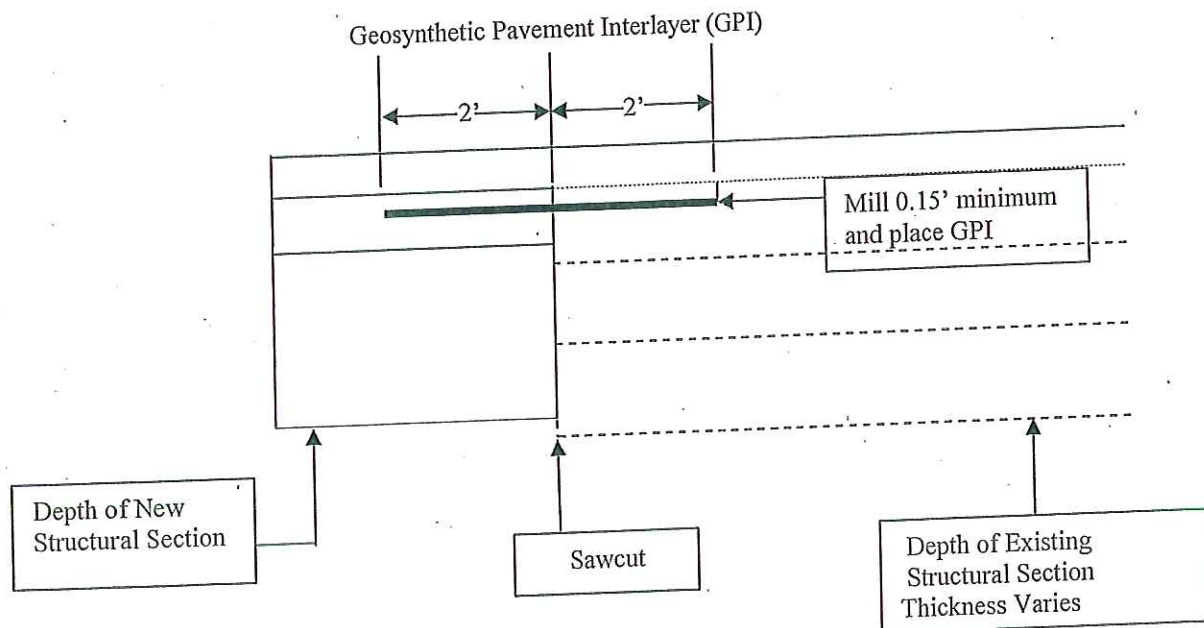
WJ:wj

cc: I. Poindexter
J. Pimentel
M. Smith
R. Mullen
Lab Files

Attachment A

01-HUM-254 PM 6.87 / 42.13
01-40950K

Structural Section and Geosynthetic Pavement Interlayer (GPI) Detail



NO SCALE

Attachment B

01-HUM-254 PM 6.87 / 42.13
01-40950K

Aggregate Size and Layer Thickness Hot Mix Asphalt (HMA) Type A

Use the following table to determine the grading:

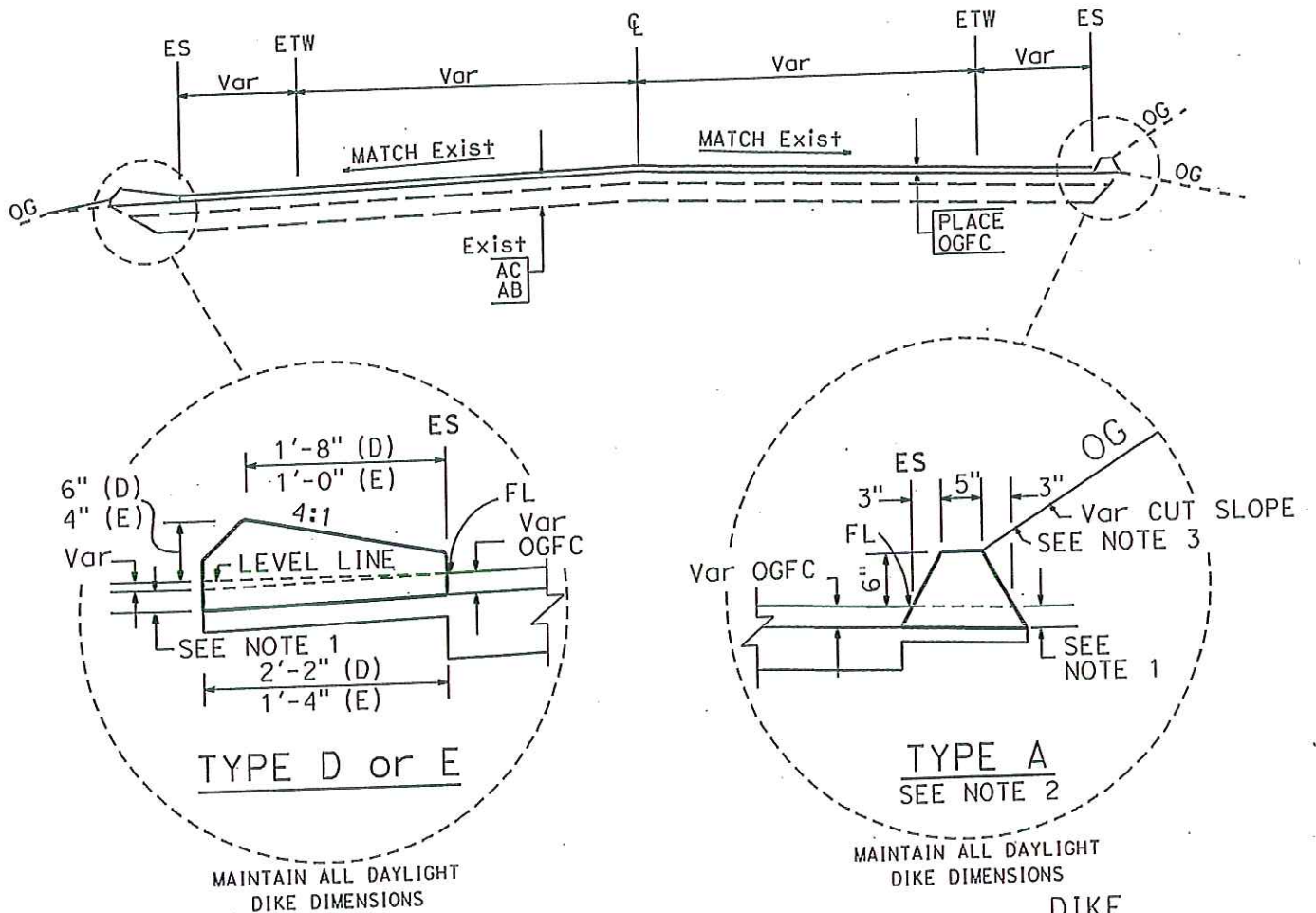
Lift Thickness Range	Grading
0.08 foot – 0.125 foot	3/8 inch
0.125 foot – 0.20 foot	1/2 inch
0.20 foot and above	3/4 inch

ATTACHMENT C

01_HUM_254 PM 6.87 / 42.13

01-40950K

MODIFIED HMA DIKE



HOT MIX ASPHALT DIKE TYPICAL WHEN PLACED WITH OGFC

NOTES:

1. THE ADDITIONAL HEIGHT OF DIKE SHALL BE EQUIVALENT TO THE DEPTH OF OGFC.
2. TYPE A DIKE ONLY TO BE USED WHERE RESTRICTIVE SLOPE CONDITIONS DO NOT PROVIDE ENOUGH WIDTH TO USE TYPE D OR TYPE E DIKE.
3. FILL AND COMPACT WITH EXCAVATED MATERIAL TO TOP OF DIKE.

DIKE QUANTITIES

TYPE	CUBIC YARDS PER LINEAR FOOT
A	* 0.0135
C	* 0.0038
D	* 0.0293
E	* 0.0130
F	* 0.0066

QUANTITIES BASED
ON 5% CROSS SLOPE

* ADJUST QUANTITY TO COMPENDATE
FOR OGFC DEPTH/HMA DIKE HEIGHT
EXTENSION

NO SCALE

Attachment D

01-HUM-254 PM 6.87 / 42.13
01-40950K

Subgrade Enhancement Geotextile (SEG)

Subgrade enhancement geotextile shall be woven and shall conform to the following requirements **:

Property	ASTM Test	Value **
Grab Tensile Strength, minimum, Lbs	D 4632	315
Puncture Resistance, minimum, Lbs	D 6241	620
Tear (impact) Resistance, minimum, Lbs	D 4533	113
Permittivity, minimum, sec ⁻¹	D 4491	.20
Apparent Opening size, maximum, Inch	D 4751	0.017
Ultraviolet Stability, minimum, %, (after 500 hrs exposure)	D 4355	50
Sewn seam strength (minimum), Lbs	D 4632	283
Elongation at break, %	D 4632	<50

** The values shown are estimations at this time and may change when basement soils are tested during the design phase.

Attachment E

Alternative Pipe Culvert Recommendation

EA 01-40950K, 01-HUM-254 PM 6.87 / 42.13 (8 Locations)

Location #	P.M.	APC Recommended for 50 Year Service Life			
		Galv. Corrugated Steel Pipe	Galv., Polymeric Sheet Coated Corrugated Steel Pipe	RCP Notes	HDPE Option
1	6.87	0.138 in (10 Gage)	0.079 in (14 Gage)	*	Yes
2	15.70	0.109 in (12 Gage)	0.079 in (14 Gage)	*	Yes
3	17.82	0.109 in (12 Gage)	0.079 in (14 Gage)	*	Yes
4	19.59	0.109 in (12 Gage)	0.079 in (14 Gage)	*	Yes
5	21.56	0.109 in (12 Gage)	0.079 in (14 Gage)	*	Yes
6	40.32	0.109 in (12 Gage)	0.079 in (14 Gage)	*	Yes
7	42.10	0.168 in (8 Gage)	0.109 in (12 Gage)	*	Yes
8	42.13	0.168 in (8 Gage)	0.109 in (12 Gage)	*	Yes

Note: Concrete and Reinforced Concrete Mitigation Measures

* Maximum water to cement ratio by weight of 0.45

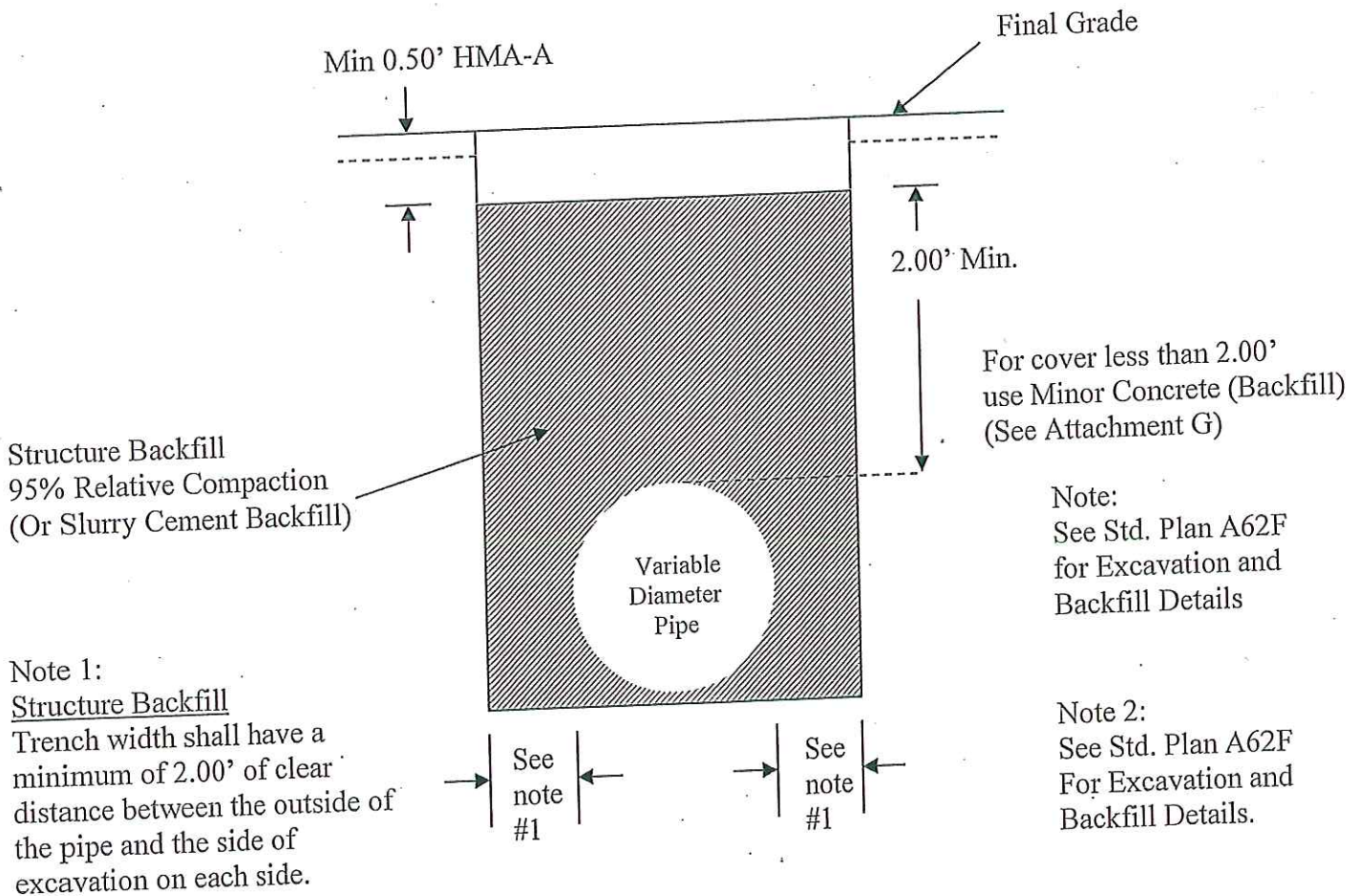
Type IP (MS) modified cement or Type II modified cement. Minimum required by Caltrans Spec. 90-1.01.

Note: Plastic pipe - Shall be high density polyethylene (HDPE), conforming to Section 64 of the Standard Specifications. Reference should be made to durability in section 854.8 of the Highway Design Manual.

Attachment F

Structure Backfill, or Slurry Cement Backfill

01-HUM-254 PM 6.87 / 42.13
01-40950K



Slurry Cement Backfill

Trench width shall be a minimum
of 0.50' beyond outside edge of
pipe and the side of excavation
on each side for pipe diameters
up to and including 42", or 1.00'
for pipes over 42" in diameter.
See Standard Specifications
19-3.062

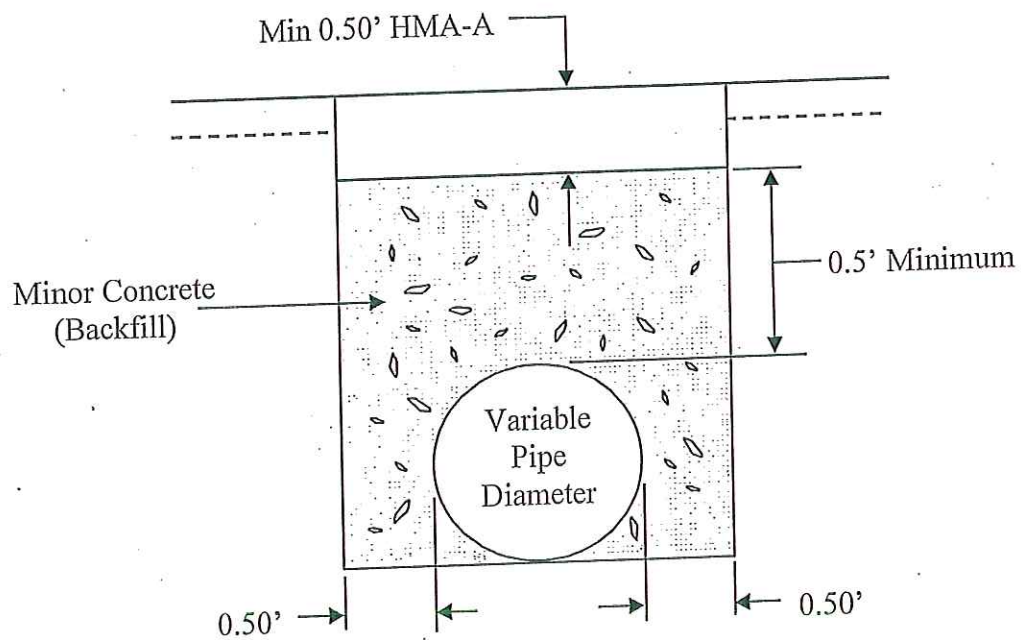
NO SCALE

Attachment G

01-HUM-254 PM 6.87 / 42.13

01-40950K

Minor Concrete (Backfill)



NO SCALE

ATTACHMENT N

PROGRAMMING SHEET

PROGRAMMING SHEET - 2009/2010

EA: 01-40950

Proj Name: Avenue Culvert Rehab

Project Manager: Richard Mullen

Co-Rte-PM: HUM-254- 004.1/ 042.1

Date: 08/03/2009

Type: SHOPP

PROJECT SCHEDULE

MILESTONE		DATE (STATUS)
Begin Environmental Document	M020	09/01/2010 (T)
Begin Project Report	M040	07/01/2010 (T)
Circulate Environmental Document (DED)	M120	12/01/2011 (T)
Project Approval & Environmental Document (PA&ED)	M200	02/01/2012 (T)
District Submits Bridge Site Data to Structures	M221	
Right of Way Maps	M224	02/01/2012 (T)
Regular Right of Way	M225	05/01/2012 (T)
District Plans, Specifications & Estimates to DOE	M377	02/01/2013 (T)
Draft Structures Plans, Specifications & Estimates	M378	
District Plans, Specifications & Estimates (PS&E)	M380	04/01/2013 (T)
Right of Way Certification	M410	07/01/2013 (T)
Ready to List (RTL)	M460	07/15/2013 (T)
Headquarters Advertise (HQ AD)	M480	08/01/2013 (T)
Approve Construction Contract	M500	10/01/2013 (T)
Contract Acceptance (CCA)	M600	10/01/2014 (T)
End Project	M800	01/01/2016 (T)

ESTIMATE	DATE	AMOUNT
ROADWAY	07/20/09	\$ 881
BRIDGE		\$ 0
Subtotal Const		\$ 881
RIGHT OF WAY	06/30/09	\$ 265
MITIGATION		\$ 0
Subtotal RW		\$ 265
GRAND TOTAL		\$ 1146

EXISTING PROGRAMMING

PAED	\$
PS&E	\$
RW - Sup	\$
RW - Cap	\$
Const - Sup	\$
Const - Cap	\$

*Does not apply to RW Capital + Not Escalated ++ Only Escalated to 1 year into Future

PROJECT COSTS BY SB45 CATEGORY

CAPITAL COST ESTIMATE (Escalation Factor)	Prior Yrs+	09/10+	10/11 (3.5%)	11/12 (3.5%)	12/13 (3.5%)	13/14 (3.5%)	Future++ (3.5%)	Total	
Right of Way						265		\$ 265	
Construction						1010		\$ 1,011	
CAPITAL COSTS TOTAL								\$ 1,276	
SUPPORT COSTS (Escalation Factor)			(1.5%)	(1.5%)	(1.5%)	(1.5%)	(1.5%)		Sup/Cap
PAED		7	108	121				\$ 236	35%
PS&E				30	60	25	12	\$ 127	19%
Right of Way				50	68	10	15	\$ 142	21%
Construction						110	68	\$ 178	25%
SUPPORT COSTS TOTAL								\$ 683	53%
TOTAL PROJECT COSTS								\$ 1,959	

PROJECT SUPPORT IN PYS

	Prior Yrs	09/10	10/11	11/12	12/13	13/14	Future	Total	PY %
Environmental	0.00	0.01	0.06	0.02	0.06	0.00	0.00	0.13	
Design	0.00	0.00	0.20	0.50	0.08	0.09	0.02	0.88	
Engineering Services	0.00	0.00	0.07	0.06	0.04	0.08	0.13	0.38	
Surveys	0.00	0.00	0.03	0.06	0.01	0.01	0.09	0.20	
Right of Way	0.00	0.01	0.08	0.36	0.66	0.13	0.19	1.43	
Traffic	0.00	0.00	0.06	0.05	0.01	0.09	0.05	0.26	
Construction	0.00	0.00	0.01	0.03	0.005	0.50	0.15	0.70	
Project Management	0.00	0.02	0.06	0.03	0.005	0.02	0.03	0.17	
District Units*	0.00	0.01	0.20	0.02	0.005	0.04	0.01	0.29	
Subtotal Dist/Region Resources	0.00	0.05	0.70	1.13	0.86	0.96	0.67	4.44	
59-DES Project Development	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03	
59-DES Structures Foundation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
59-Office Engineer	0.00	0.00	0.00	0.00	0.05	0.06	0.00	0.11	
59-DES Project Management	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
59-DES Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
59-DES Other Units**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Subtotal DES Resources	0.00	0.00	0.00	0.00	0.05	0.09	0.00	0.14	
TOTAL PYs	0.00	0.05	0.70	1.13	0.91	1.05	0.67	4.54	

*Admin, Plng, Maintenance

**DES Admin, DES Plng, DES Maintenance

HRS/PYS = 1758

Comments:

ATTACHMENT O

RISK MANAGEMENT PLAN

Risk Input Sheet

[illegible]